Annasaheb Dange College of Engineering & Technology, Ashta.

(An Autonomous Institute)

Curriculum Structure

F.Y.B.Tech.

Food Technology

SEMESTER I-II

DEPARTMENT OF FOOD TECHNOLOGY

Annasaheb Dange College of Engineering and Technology Ashta

Department of Food Technology

Teaching and Evaluation Scheme

ADCET

F. Y. B. Tech Semester I																				
Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
1FTBS101	Applied Mathematics - I	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTBS102	Applied Physics	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTBS103	Applied Chemistry - I	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTES104	Basic Electrical and Electronics Engineering	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTPC105	Food Science	1	-	-	1	50	20	-	-	-	50	20	-	-	-	-	-	-	50
1FTBS106	Applied Physics Lab	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
1FTBS107	Applied Chemistry Lab	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
1FTES108	Basic Electrical and Electronics Engineering Lab	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
1FTES109	Design Thinking	1	-	2	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50
1FTHS110	Value Added Course I	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
		14	1	10	20														700
	Total Contact Hours				25														

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Department of Food Technology

Teaching and Evaluation Scheme

ADCET

F. Y. B. Tech Semester II																			
Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
1FTBS111	Applied Mathematics - II	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTES112	Applied Chemistry - II	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTPC113	Engineering Thermodynamics	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTES114	Engineering Graphics	2	-	-	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100
1FTES115	Programming for problem solving	1	-	2	2	-	-	-	-	-	-	-	50	20	50	20	100	40	100
1FTHS116	Professional Communication Skills	-	-	4	2	-	-	-	-	-	-	-	50	20		-	50	20	50
1FTES117	Applied Chemistry Laboratory - II	-	-	2	1	-	-	-	-	-	-	-	50	20		-	50	20	50
1FTES118	Engineering Graphics Laboratory		-	2	1	-	-	-	-	-	-	-	50	20		-	50	20	50
1FTHS119	Value Added Course - II	-	-	2	1	-	-	-	-	-	-	-	50	20		-	50	20	50
		12	2	12	20														700
	Total Contact Hours				26														

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Department of Food Technology ADCET ASHTA

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F.Y. B.Tech. – Food Technology

Course details:

Class	F.Y. B. Tech, Sem.-I
Course Code and Course Title	1FTBS101**Applied Mathematics I**
Prerequisite	---
Teaching Scheme: Lecture/Tutorial/Practical	03/01/00
Credits	04
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes (COs): After successful completion of this course, the student will be able to:	
1FTBS101_1	**Solve** the system of linear equations by using matrix method and numerical techniques.
1FTBS101_2	**Calculate** Eigen values and Eigen vectors and power of matrix by using Cayley-Hamilton theorem.
1FTBS101_3	**Fit** the curves for bivariate data by **applying** least square techniques.
1FTBS101_4	**Apply** Taylor series to find the expansion of functions.
1FTBS101_5	**Compute** the n^{th} power and roots of the complex number by using De-Moivre's Theorem.

Course Contents:		**Hrs**
Unit 1	**Matrices and Solution of Linear System Equations:** Rank of a matrix, Normal form of a matrix, echelon form, Consistency of linear system of equations (system of homogeneous and non homogeneous linear equation).	07
Unit 2	**Eigen Values and Eigen Vectors:** Vectors, Linear dependence and linear independence of vectors, Eigen values, Properties of Eigen values, Eigen vectors, Properties of Eigenvectors, Cayley-Hamilton Theorem (Inverse and Higher powers of matrix).	08
Unit 3	**Numerical Solution of System of Simultaneous Linear Equations:** Gauss Elimination Method, Gauss-Jordan Method, Iterative Method –Gauss Jacobi method and Gauss Seidel method, Eigen value using Power method.	06
Unit 4	**Curve fitting and Statistics:** Method of Least Squares, Fitting of Straight Line, Fitting of Parabola, Fitting of exponential curves, Lines of Regression.	06
Unit 5	**Expansion of Functions and Indeterminate Forms:** Taylor's series, Maclaurin's series, Standard expansions, Expansion of function using Standard series, Indeterminate forms.	07
Unit 6	**Complex Numbers:** De Moivre's theorem, Roots of a complex number, Expansion of sin(nx) and cos(nx) in powers of sinx and/or cosx, Circular functions of a complex variable, Hyperbolic functions, relation between circular and hyperbolic functions, Inverse Hyperbolic functions.	08

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FY-FT 02/50

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publishers	44th	2018
02	Advanced Engineering Mathematics	N. P. Bali, Manish Goyal	Infinity science press	7th	2010
03	Advanced Engineering Mathematics	Erwin Kreyszig	Wiley Publishers	10th	2017
04	Numerical Methods	Dr. P. Kandasamy, Dr. K.Thilagavathy, Dr. K. Gunavathi	S. Chand	1st	2010

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Numerical Methods in Engineering & Science	Dr. B. S Grewal	Khanna Publishers	9th	2010
02	Advanced Engineering Mathematics	H. K. Das	S. Chand	22nd	2018
03	A textbook of Applied Mathematics	P.N. Wartikar & J. N. Wartikar	Pune Vidyarthi Griha Prakashan	1st	2008
04	Higher Engineering Mathematics	B. V. Ramana	Tata McGrawHill Publ.	6th	2010

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FY-FT-03150

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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y.B. Tech, Sem.- I
Course Code and Course Title	1FTBS102 **Applied Physics**
Prerequisite/s	Higher Secondary level Physics
Teaching Scheme: Lecture/Tutorial/Practical	03 / 00 / 00
Credits	03
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes (COs): After successful completion of this course, the student will be able to:	
1FTBS102_1	Apply suitable optical theory to determine wavelength and divergence of monochromatic and polychromatic sources of light using relevant optical methods of testing.
1FTBS102_2	Calculate the interplaner spacing, lattice constant and properties of unit cell for a given crystal system based on the crystallographic study using laws of material science.
1FTBS102_3	Use concept of Nanotechnology to express Production technique and tools of nano material using different synthesis methods and microscopes.
1FTBS102_4	Solve engineering problems based on Architectural acoustics and Ultrasonic's using appropriate theories and formulae.
1FTBS102_5	Apply principles of Quantum mechanics to calculate observables on known wave functions using fundamental quantum mechanical processes in nature.

Course Contents:		**Hrs**
Unit 1	**Wave Optics :** **Diffraction:-**Introduction, construction of plane diffraction grating, Diffraction at multiple slits, Determination of wavelength of particular colour using plane diffraction grating, Resolving power of grating, Numericals. **Polarization:-** Polarization of light, Polarization by double refraction, Positive and Negative crystals, Optical activity, Laurent's half shade Polarimeter, Numericals.	07
Unit 2	**Laser and Fibre Optics :** **Laser**: Introduction to laser, Laser and ordinary light, Interaction of radiation with matter- Absorption, Spontaneous emission, Stimulated emission, Pumping(Three level and four level), Population inversion, Metastable state, Laser beam Characteristics, Solid State laser (Ruby Laser), Industrial and medical applications of laser, Holography- Difference between ordinary photography and Holography, Construction and reconstruction of Hologram. **Optical fibre**: Introduction, Basic principle (total internal reflection), Structure of optical fibre, Propagation of light through optical fibre, Acceptance angle and acceptance cone (no derivation), Fractional refractive index change, Numerical aperture (no derivation), Classification of optical fibre, Advantages and disadvantages of optical fibre, Applications of optical fibres, Numericals.	07
Unit 3	**Structure of Solids and its Characterization:** Crystalline state, Lattice, Space lattice, Basis and crystal structure, Unit cell, lattice parameters, Crystal system in brief, (Cubic, Monoclinic...Triclinic), Fourteen Bravais lattices, Properties of unit cell (number of atoms per unit cell, coordination number, atomic radius, packing fraction), Calculation of lattice constant(Relation between lattice constant and density), Symmetry elements in cubic crystal, Miller indices:- Procedure, Features and Sketches for different planes. **X-ray diffraction** (Laue method), Bragg's law, Bragg's X-ray diffractometer, Numericals.	07

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FY-FT-04/50

Unit 4	**Nano Physics:** Introduction, Concept of nanotechnology, Production techniques:- Top-down (eg. Ball milling) and Bottom-up (eg. Sol-gel process), Tools – Scanning Electron Microscope (SEM) and Atomic Force Microscope (AFM), Applications of nano- materials, Carbon Nano Tube (CNT):- Structure, two types, properties and applications.	07
Unit 5	**Architectural acoustics and Ultrasonic :** **Architectural Acoustics**: Introduction, Basic requirements for acoustically good hall, Reverberation, Time of Reverberation, Sabine's formula (no derivation),Absorption coefficient, Factors affecting the architectural acoustics and their remedy, , Numericals. **Ultrasonic waves:** Introduction, Properties of ultrasonic waves, Production of ultrasonic waves by magnetostriction method, Determination of wavelength and velocity of ultrasonic waves by using acoustic diffraction method, Detection of ultrasonic waves, Applications of ultrasonic waves, Numericals. **Microwaves-** Properties, Advantages, Disadvantages and its applications.	07
Unit 6	**Quantum Physics:** Introduction to Quantum mechanics, Plank"s Quantum Theory, Photoelectric Effect, Compton Effect with theory, Wave Particles Duality, Matter waves, Properties of Matter wave, Heisenberg Uncertainty principle for position and momentum of particle, Problems.	07

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Engineering Physics	G Vijayakumari	Vikas Pub. House (P) Ltd	3rd	2009
2	A Text Book of Engineering Physics	M.N.Avadhanulu& P. G. Kshirsagar	S. Chand Publication.	12th	2006
3	Engineering Physics	P. K. Palanisamy	Sci Tech pub. (P) Ltd.	2nd	2009
4	Introduction to Nano science and Nanotechnology:	K.K. Chattopadhyay and A.N. Banerjee,	PHI Learning	3rd	2009

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1	Engineering Physics	ResnickHalliday, Krane,	John Wiley & Sons Pub.	8th	2008
2	Engineering Physics	R. K. Gaur & Gupta S. L	DhanapatRai Publication	8th	2008
3	Solid State Physics:	S. O. Pillai	New Age International Ltd.	6th	2007
4	Introduction to Solid State Physics	Charles Kittle,	Wiley India Pvt. Ltd	7th	2008
5	Materials Science and Engineering –	V. Raghvan,	PHI Learning.	5th	2006
6	Engineering Physics:	D.K. Bhattacharya and A.Bhaskaran,	Oxford University Press	6th	2010

Useful Links

1	For optics- https://nptel.ac.in/courses/122/107/122107035/
2	For Quantum Physics -https://nptel.ac.in/courses/122/106/122106034/
3	For Ultrasonic -- https://freevideolectures.com/course/3531/engineering-physics-i/8
4	For Solid State Physics -- https://nptel.ac.in/courses/115/105/115105099/

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FY-FT-05/58

Sant Dnyaneshwar Shikshan Sanstha's
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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y., B. Tech.
Course Code and Course Title	**1FTBS103 Applied Chemistry-I**
Prerequisite/s	---
Teaching Scheme: Lecture/Tutorial	03/00
Credits	03
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes: Upon successful completion of this course, the students will be able to:	
1FTBS103_1	Apply principles of water testing to identify water quality parameters and methods of water softening using fundamental laws.
1FTBS103_2	Classify fuels and analytical methods to identify their characteristics using basic principles of chemistry.
1FTBS103_3	Select engineering, ceramic materials on the basis of it's properties and applications using their chemical composition.
1FTBS103-4	Apply the methods of prevention of corrosion to a given metal considering it's types and factors affecting corrosion.
1FTBS103_5	Compute the values of hardness of water and calorific values of fuels using fundamental equations.

Course Contents:		Hrs.
Unit 1	**Water Technology:** Introduction, impurities in natural water, Water Testing: acidity, alkalinity and chlorides, hardness of water (definition, causes and significance), Calculations of total hardness, disadvantages of hard water in domestic and industrial applications. Scales and sludges: Formation in boilers and removal, Treatment of hard water by ion- exchange process, Zeolite process, Desalination of brackish water by Reverse Osmosis.	07
Unit 2	**Chemical and Instrumental Techniques:** Chemical analysis, its types, Different ways to express concentration of solution. Numerical problems. Standards and its types. **p^H-metry:** Introduction, pH measurement using glass electrode and applications. **Spectrometry**: Introduction, Laws of spectrometry (Lamberts and Beer-Lambert's law). Instrumentation and applications of UV-Visible spectrophotometer, **Chromatography**: Introduction, Principle, instrumentation and applications of gas-liquid chromatography (GLC).	07
Unit 3	**Engineering Materials:** **A) Polymers**: Introduction, plastics, thermo-softening and thermosetting plastics, industrially important plastics like phenol-formaldehyde, urea formaldehyde. Conducting polymers, biodegradable polymers (properties and applications), composites, fibre-reinforced plastics (FRP) and glass reinforced plastics (GRP). **B) Lubricants:** Introduction, classification of lubricants (solid, semisolid and liquid), lubrication and it's types, characteristics of lubricants: viscosity, viscosity index, flash point, fire point, cloud point and pour point.	07
Unit 4	**Fuels and Non-conventional Energy Sources:** **Fuels:** Introduction, classification, characteristics of good fuels, comparison between solid, liquid and gaseous fuels, types of calorific value (higher and lower), Bomb calorimeter and Boy's calorimeter. Numericals on Bomb and Boy's calorimeter. **Batteries:** Introduction, Characteristics of a battery, Rechargeable Li- ion batteries (Diagram, charging-discharging reactions, advantages and applications). **Fuel Cells:** Introduction, H_2-O_2 Fuel cell (Construction, working and applications), applications of fuel cells.	07

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FY-FT-06/50

Unit 5	**Corrosion & Green Chemistry:** **Corrosion:** Introduction, causes, types, Atmospheric corrosion (oxidation corrosion), Electrochemical corrosion (hydrogen evolution and oxygen absorption mechanism), factors affecting rate of corrosion. Prevention of corrosion by proper design and material selection, hot dipping (galvanizing and tinning), cathodic protection method, electroplating, metal cladding. **Green Chemistry:** Definition, Twelve principles of green chemistry, Research and industrial applications.	07
Unit 6	**Metallic & Ceramic Materials:** **Alloys:** Introduction, alloy definition and classification, purposes of making alloys. Ferrous alloys: Plain carbon steels (mild, medium and high). Nonferrous alloys: Copper alloy (Brass), Nickel alloy (Nichrome), Aluminum alloy (Duralumin and Alnico). **Ceramic Materials:** Introduction, types of ceramics, types of cement & their applications, Manufacture of Portland Cement by wet process, Composition of Portland Cement & their functions- a) Chemical composition, b) Compound composition, Setting & hardening of Portland Cement.	07

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	A Text Book of Engineering Chemistry	S. S. Dara	S. Chand & Co. Ltd., New Delhi.	11th	2008
02	A Text book of Engineering Chemistry	Shashi Chawala	Dhanpat Rai Publishing Co. New Delhi.	3rd	2007
03	A Test Book of Applied Chemistry	Ziyauddin D. Sande, Vijayalaxmi M. Vairat, Pratapsingh V. Gaikwad	Wiley Publications	1st	2018

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Chemistry	Jain & Jain	Dhanpat Rai Publishing Co., New Delhi.	16th	2015
02	Industrial Chemistry	B. K. Sharma	Goel publication (P) Ltd.	10th	1999
03	Fundamentals of Engineering Chemistry	S. K. Singh	New Age International (P) Ltd, New Delhi.	1st	2009
04	Instrumental Methods of Chemical Analysis	Chatwal and Anand	Himalaya Publishing House, Mumbai.	5th	2005
05	Engineering Chemistry	Wiley India	Wiley India Pvt. Ltd., New Delhi.	1st	2012

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FY-FT-07/50

Sant Dnyaneshwar Shikshan Sanstha's
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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y. B. Tech. Sem– I
Course Code and Course Title	1FTES104 **Basic Electrical & Electronics Engineering**
Prerequisite/s	Simultaneous Linear Equations & Semiconductor Physics
Teaching Scheme: Lecture/Tutorial / Practical	03/ 00/00
Credits	03
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes (COs): After successful completion of this course, the student will be able to:	
1FTES104 _1	**Solve** the DC circuits with independent sources using Kirchhoff's laws and Network Theorems.
1FTES104 _2	**Analyse** the parameters of A. C. circuits with an interpretation of the relationship between voltage, current, and power.
1FTES104 _3	**Explain** the construction and working principle of electrical machines using fundamental laws, and their applications.
1FTES104 _4	**Discuss** the working of semiconductor devices and analyse its characteristics of from the basic principles
1FTES104 _5	**Construct** sequential logic circuits and combinational logic circuits using flip flops & boolean laws, logic gates
1FTES104 _6	**Explain** the working of the transducer to measure the physical quantities and their applications

Contents content:		**Hrs.**
Unit 1	**DC Circuits:** Electrical circuit elements, KCL and KVL. Star- delta conversion, voltage, and current sources. Thevenin, Norton, and Superposition.	7
Unit 2	**AC Circuits:** Sinusoidal waveforms, peak, average, RMS values, phasor representation, real, reactive, and apparent power. Analysis of single-phase, AC circuits consisting of R, L, C, RL, RC, RLC circuits, and three-phase balanced circuits. Voltage and current relations in star and delta.	7
Unit 3	**Electrical Machines:** Construction, Principle of Operation, Basic Equations and Applications of DC Generators, DC Motors, Single-Phase Transformer, and Single-Phase Induction Motor. Applications of Stepper, Servo, and Universal Motors. Introduction to Fuse & Circuit breakers	7
Unit 4	**Semiconductor Devices and Applications**: Introduction - Characteristics of PN Junction Diode, Zener Effect – Zener Diode and its Characteristics – Half Wave and Full Wave Rectifiers – Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics	7
Unit 5	**Digital Electronics:** Binary Number System – Boolean Algebra theorems– Digital circuits - Introduction to sequential Circuits– Flip-Flops – Registers and Counters – A/D and D/A Conversion	7
Unit 6	**Transducers & Applications:** Transducers for Displacement, level, temperature pressure speed measurement range specifications, Applications of transducers in Digital thermometer, weighing machine, washing machine, microwave oven, and mobile handset.	7

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FY-FT-08/50

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Principles of Electrical Engineering and Electronics	V. K. Mehta	S. Chand & Co., Publications, New Delhi	3rd	2010
02	Basic Electrical and Electronics Engineering	D.P. Kothari	TMH, New Delhi	2nd	2014
03	Electrical Circuit Theory and Technology	John Bird	Routledge	5th	2013
04	Sensors and Transducers	D. Patranabi	PHI Learning Pvt. Ltd	2nd	2003

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Integrated Electronics	Millman and Halkias	McGraw Hill	2	2010
02	Electrical Technology", Vol.–II	A.K. Thereja and B.L.Thereja,	S. Chand & Co., Publications	2	2007
03	Basic Electrical Engineering	U. Bakshi and A. Bakshi	Technical Publications, Pune	1	2005
04	Electronic Principles	Albert Malvino, David Bates	McGraw Hill Education	7	2017

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Sant Dnyaneshwar Shikshan Sanstha's

Annasaheb Dange College of Engineering and Technology, Ashta

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F.Y. B.Tech. – Food Technology

Course Details:

Class:	F. Y. B.Tech., Sem – I
Course Code and Course Title:	1FTPC105 – **Food Science**
Prerequisite/s:	BS103 Applied chemistry -I
Teaching Scheme: Lecture/Tutorial / Practical	01/00/00
Credits: Theory	01
Evaluation Scheme: ISE	50

Course Outcomes: After completing this course students will be able to	
1FTPC105_1	Understand the functional aspects of food components and to study their role in food chemistry
1FTPC105_2	Know the important genera of microorganisms associated with food and their Characteristics and to understand the role of microbes in food processing.
1FTPC105_3	Acquaint with fundamentals of food engineering and its process
1FTPC105_4	Apply the basic knowledge of food science

Course Contents:		**Hrs.**
Unit 1	**Introduction to Food** Food groups: Basic 4, 5&7 food groups, Functional food groups-energy yielding, body building and protective foods (only sources and not properties and functions). Food Pyramid, Study of various processing methods – Milk processing, fruits and vegetables processing, meat, poultry and fish processing, cereal processing, bakery and confectionary.	03
Unit 2	**Introduction to Food chemistry** definition, scope and importance; Composition and nutritive value of common foods, chemical properties of food constituents viz. water, carbohydrates, lipids, proteins, enzymes, vitamins, minerals, characteristics of food quality.	04
Unit 3	**Food Microbiology** Introduction to microbiology and its significance in foods- pathogenic and spoilage organisms, beneficial organisms; Major groups of microorganisms - bacteria, yeasts, molds and viruses, its relationship with foods, Prokaryotes and Eukaryotes morphology, structure and function of microbial cells	03
Unit 4	**Introduction to Food Engineering** Mode of heat transfer- conduction, convection and radiation and its application in food industry; fluid flow- classification of fluid, properties of fluid; refrigeration – principle of refrigeration, properties of common refrigerant, vapor compressor and vapor absorption refrigeration systems	04

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1.	Food facts and Principle	N. ShakuntalaManay, M. Shadaksharaswamy	New age international publications	3rd	2021
2.	Food Microbiology	W. C. Frazier, D. C. Westhoff	McGraw-Hill	5th	2013

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1.	Fennema's Food Chemistry, Fourth Edition	Kirk Lindsay Parkin, Srinivasan Damodaran, Owen R. Fennema	CRC Press	5th	2017
2.	Food Processing Technology: Principles and Practice	P.J. Fellows	Elsevier Science	4th	2016

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FY-FT-10/50

Sant Dnyaneshwar Shikshan Sanstha's
Annasaheb Dange College of Engineering and Technology, Ashta
(An Autonomous Institute)
F.Y. B.Tech. – Food Technology

Course Details (Laboratory)

Class	F.Y.B.Tech Sem: I
Course Code and Course Title	1FTBS106 **Applied Physics Laboratory**
Prerequisite/s	.....
Teaching Scheme: Lecture/Tutorial / Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes :The students will be able to	
1FTBS106_1	Apply suitable optical theory to calculate wavelength and divergence of monochromatic and polychromatic sources of light using plane diffraction grating.
1FTBS106_2	Calculate band gap energy and Specific rotation for a given semiconductor and sugar solution using appropriate theories and formulae.
1FTBS106_3	Demonstrate Symmetries, planes and properties of unit cell for a given crystal system based on the crystallographic study using laws of material science.
1FTBS106_4	Communicate effectively about laboratory work both orally and writing.
1FTBS106_5	Practice professional and ethical behavior to carry forward in their life.

Expt. No.	Title of the Experiment
1	Plane Diffraction Grating
2	Resolving power of Grating
3	Resolving power of telescope
4	Laurent's Half Shade Polarimeter
5	Kund's tube for determination of velocity of sound
6	Divergence of the LASER Beam
7	Wavelength of LASER
8	Inverse Square Law
9	Band Gap energy
10	Seven Crystal System
11	Symmetry Element of Cube
12	Numerical aperture of optical fiber
13	Double Refraction
14	Material Characterization using ultrasound.

Minimum **EIGHT** experiments should perform from the above list.

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FY-FT-11/50

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
1	Fundamentals of Physics	ResnickHallidayand walker	John Wiley & Sons Pub.	9th	2011
2	Concepts of Modern Physics	A Besir	McGraw Hill International	5th	2003
3	Solid State Physics:	S. O. Pillai	New Age International Ltd.	6th	2007
4	Introduction to Solid State Physics	Charles Kittle,	Wiley India Pvt. Ltd	7th	2008
5	Optics	AjoyGhatak	Tata McGraw Hill	5th	2012
6	Engineering Physics:	D.K. Bhattacharya and A.Bhaskaran,	Oxford University Press	6th	2010

Useful Links

1	https://nptel.ac.in/courses/115/105/115105121/
2	https://www.iitg.ac.in/cet/nptel.html
3	http://nptel.ac.in/video.php?subjectId=117106091

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FY-FT-12/50

Sant Dnyaneshwar Shikshan Sanstha's
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F.Y. B.Tech. – Food Technology

COURSE DETAILS (LABORATORY):

Class	F.Y., B.Tech.
Course Code and Course Title	**1FTBS107 Applied Chemistry –I Laboratory**
Prerequisite/s	--
Teaching Scheme: Practical	02/00
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): After successful completion of this course, the students will be able to:	
1FTBS107_1	Determine the hardness acidity, alkalinity, chloride content using appropriate methods of titration for given sample of water.
1FTBS107_2	Estimate rate of corrosion in acidic and alkaline medium by depreciation of weight.
1FTBS107_3	Use pH meter to determine pH value of given solution and validate the findings with suitable optical method (photo-colorimeter) and graphical methods.
1FTBS107_4	Analyze coal sample, lubricants and aqueous solutions to get the percentage compositions using appropriate methods.
1FTBS107_5	Communicate effectively about laboratory work both orally and writing.

Expt. No.	Title of the Experiment
1	Determination of acidity of water sample. (Neutralization Titration)
2	Determination of alkalinity of water sample. (Acid- Base Titration).
3	Determination of chloride content of water by Mohr's method. (Precipitation Titration).
4	Determination of total hardness of water sample by EDTA method.
5	Determination of moisture, voltile and ash content in a given coal sample. (Proximate analysis)
6	Preparation of Urea-formaldehyde resin.
7	Determination of viscosity of lubricating oil.
8	Estimation of zinc in brass solution (Displacement Titration)
9	Estimation of copper in brass solution (Displacement Titration)
10	Determination of rate of corrosion of aluminium in acidic and basic medium
11	Determination of pH of sample solution by pH meter
12	Determination of calorific value of fuel using Bomb calorimeter.
13	Demonstration of Photo-colorimeter.

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Text Books:					
Sr. No	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
1	A Text Book of Engineering Chemistry	S. S. Dara	S. Chand & Co. Ltd., New Delhi.	11th	2008
2	A Text Book of Engineering Chemistry	Shashi Chawala	Dhanpat Rai Publishing Co. New Delhi.	3rd	2007

Reference Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
1	Materials Science and Engineering –	V. Raghvan	PHI Learning.	5th	2006
2	Engineering Chemistry	Jain & Jain	Dhanpat Rai Publishing Co., New Delhi.	15th	2010
3	Industrial Chemistry	B. K. Sharma	Goel publication (P) Ltd.	10th	1999

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F.Y. B.Tech. – Food Technology

Course Details (Laboratory):

Class	F.Y. B. Tech. Sem – 1
Course Code and Course Title	1FTES108 **Basic Electrical & Electronics Engineering Laboratory**
Teaching Scheme: Lecture/Tutorial / Practical	00/ 00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): After successful completion of this course, the student will be able to:	
1FTES108_1	**Apply** the knowledge of network solution techniques and theorems to solve a variety of electrical circuits and **Experiment** on linear DC and AC electrical circuits.
1FTES108_2	**Plot** various characteristics of semiconductor devices and **demonstrate** its operation
1FTES108_3	**Demonstrate** digital electronics circuit on experimental set ups and verify it logical operations
1FTES108_4	**Tabulate** observations and communicate conclusions and results in oral as well as written form
1FTES108_5	**Acquire** experience of working individually as well as a team in designing, building and troubleshooting simple analog electronic circuits

Expt. No.	Title of the experiment
1	Verification of Ohm's law.
2	Verification of Kirchhoff's Current and Voltage law
3	Measurement of Power and Energy in single phase resistive load circuit.
4	Transformation ratio of a single-phase transformer at different loads
5	Speed control of DC motor
6	Power factor improvement
7	Three phase power measurement (Two Wattmeter Method)
8	Determination of R.M.S. Values of a sinusoidal waveform.
9	Verification of PN junction diode characteristics.
10	Verification of Zener diode characteristics.
11	Determine input and output characteristics of CB Configuration of Transistor.

Minimum eight experiments should be performed in laboratory.

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Course details (Laboratory):

Class	F. Y. B. Tech. Sem: I
Course Code and Course Title	**1FTES109, Design Thinking Laboratory**
Prerequisite/s	---
Teaching Scheme: Lecture/Tutorial / Practical	01/00/02
Credits	02
Evaluation Scheme: ISE	50

Course Outcomes : After successful completion of this course the students will be able to	
1FTES109_1	Apply the design thinking techniques to empathize the customer through arranging survey and/or interviews.
1FTES109_2	Identify and formulate the solution for real world problem using design thinking technique.
1FTES109_3	Create a Prototype for defined problem using design thinking approach.
1FTES109_4	Test developed prototype to meet user's requirements through customer feedback or prototype exhibitions.
1FTES109_5	Adapt ethical practices and professional skills to provide a reliable solution for defined real world problem through participating in team activities.

Course content

Unit	Content	Hrs.
1	Introduction to Design Thinking, Design Thinking Process	02
2	Empathize Phase: Empathy and Ethics, User Perspective, Activities – Empathy Map, Planning, Persona building.	02
3	Customer Journey Mapping, Observation of stakeholders, Defining and Conceptualization of problem	02
4	Ideation, Activities – 5 Whys & 1 How, Story boarding, Brainstorming.	02
5	Prototype – Types, Mindsets, Tools.	02
6	Testing – Scenario, Methods, Refinements & Recommendations.	02

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Expt. No	Title of the Experiment
1	Identification and Selection of Problems
2	Designing of Empathy Map
3	Customer Survey and Analysis
4	Persona Building
5	Customer Journey Map
6	Defining the problem
7	Poster Presentation
8	Ideation
9	Prototype Building
10	Testing

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1	Karmic Design Thinking - A Buddhism-Inspired Method to Help Create Human-Centered Products &Services	Prof. BalaRamadurai,	Self-Published	--	2020
2	Understanding Design Thinking, Lean, and Agile	Jonny Schneider	O'Reilly	---	2017
3	Introduction to Design Thinking	S. Salivahanan, S. Suresh Kumar, D. Praveen Sam,	Tata McGraw Hill,	---	2019
4	Design: Creation of Artifacts in Society	Prof. Karl Ulrich, U. Penn	University of Pennsylvania	--	2011

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1	Design for How People Think	John Whalen	O'Reilly	---	2019
2	Change by Design	Tim Brown	HarperCollins	---	2009
3	Creative Confidence: Unleashing the Creative Potential Within Us All	Kelley, D. & Kelley, T	New York: William Collins	---	2014
4	Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days	Jack Knapp and others	Simon & Schuster	---	2009

Other Books/E-material

Sr. No	Title	Instructor	Publisher
01	NPTEL Course- Design Thinking A Primer	Prof. AshwinMahalingam & Prof. BalaRamadurai	www.nptel.ac.in
02	NPTEL Course- Innovation by Design	Dr. B.K. Chakravarthy	www.nptel.ac.in

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Course Details: Value Added Course - I

Class	F.Y,B.Tech, Sem.-I
Course Code and Course Title	1FTVA110, A **Badminton**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110A_1	Improve physical fitness.
1FTVA110A_2	Understand the basic rules and how they can play the game of badminton.
1FTVA110A_3	Provide opportunities for playing modified games to promote student learning
1FTVA110A_4	Develop students' critical thinking skills, problem solving skills, self-management skills, collaboration skills, risk assessment, etc
1FTVA110A_5	Learn various technical motor skills in badminton and how you can move better in the court.
1FTVA110A_6	Acquiring a satisfactory level of knowledge and experience of the sport, to enable students to play by themselves for recreation.

Course Contents:

Unit No.	Tittle	Hrs.
Unit 1	Introduction to badminton – Aim – Objectives – Short reference in Badminton history Understand the basic rules and how they should play normal game.	**04**
Unit 2	Skills - Service, Net shot, Clear, Drop, Smash. Skills - Service Forehand & Backhand, Net shot, Drive (Presentation and practice to the court)	**06**
Unit 3	Skills – Clear, Drop, Smash Implementation of singles rules	**05**
Unit 4	Footwork 1 Footwork 2	**05**
Unit 5	Implementation of doubles rules. Forehand strokes. Motor skills practice 1	**06**
Unit 6	Motor skills practice 2 Motor skills practice 3 Motor skills practice 4	**04**

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Course Details:

Class	F.Y,B.Tech, Sem.-I
Course Code and Course Title	1FTVA110,B **Volley Ball**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110B_1	To send the ball over the net, according to the regulations, to the ground on the opponents ground
1FTVA110B_2	The ball is put into play trough the service right back player within the service zone
1FTVA110B_3	The Ball must hit with one hand or one arm and directly send over the net opponents court.
1FTVA110B_4	To valley the ball over the net before it touches on the ground
1FTVA110B_5	The players use their hands to volley the ball.

Course Contents:

Unit No.	Tittle	Hrs.
Unit 1	Introduction & Understand basic volleyball rules, terminology, and scoring procedures.	**04**
Unit 2	Demonstrate basic skills associated with volleyball, including passing, setting, serving, attacking (spiking), and blocking.	**06**
Unit 3	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	**05**
Unit 4	Demonstrate an understanding of the typical game sequencing: serve, pass, attack, defense, transition, and defense.	**05**
Unit 5	Understand and apply the knowledge of basic rules of volleyball. Skill Practice	**06**
Unit 6	Demonstrate proper etiquette and good sportsmanship. And Skill related Practice. Skill Practice	**04**

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Course Details:

Class	F.Y,B.Tech, Sem.-I
Course Code and Course Title	1FTVA110,C **Kabaddi**
Prerequisite/s	------
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110C_1	Acquire, analyze and interpret basic skills
1FTVA110C_2	Appraise the rules and regulation.
1FTVA110C_3	Demonstrate and assess various basic skills/techniques and game strategies.
1FTVA110C_4	Develops confidence, concentration and tolerance in players.
1FTVA110C_5	This game also provides a opportunity for healthy competitions among equal players and help them make friends.

Course Contents:

Unit No.	Tittle	Hrs.
Unit 1	Introduction to Kabaddi – Aim – Objectives – Short reference in Kabaddi history Understand the basic rules and how they should play normal game.	**04**
Unit 2	Demonstrate basic skills associated with Kabaddi, including pushing, Bonus, Tackling, attacking, and blocking	**06**
Unit 3	Demonstrate an understanding of the typical game sequencing: service, Bonus, attack, defense, Raiding and defense.	**05**
Unit 4	Demonstrate the ability to perform individual offensive and defensive skills and strategies. Stepping Practice.	**05**
Unit 5	Skill Demo – Stepping, Bonus, Foot touch, Toe touch, Thrust, Squat leg, Kicks & Practice.	**06**
Unit 6	Skill Practice And Shadow Practice	**04**

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Course Details:

Class	F.Y,B.Tech, Sem.- I
Course Code and Course Title	1FTVA110D, **Foot Ball**
Prerequisite/s	------
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110D_1	By applying these principles through active participation, students develop the necessary Skills and knowledge to play football
1FTVA110D_2	Provides students with opportunities to improve physical fitness acquire knowledge of fitness concepts and practice positive personal and social skills.
1FTVA110D_3	Students will gain an understanding of how a wellness lifestyle affects one's health, fitness and physical performance

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Football – Aim – Objectives – Short reference in Football history Understand the basic rules and how they should play normal game.	**04**
Unit 2	Introduce students to the basic skills and knowledge associated with football. Understand basic football rules, terminology, and safety concerns.	**06**
Unit 3	Demonstrate the basic football skills of passing, three point stance, catching, blocking, hand-offs, punting, the carry and kicking & Practice.	**05**
Unit 4	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	**05**
Unit 5	Improve personal fitness through participation in yoga, muscular strength, muscular endurance, and flexibility activities & Practice.	**06**
Unit 6	Successfully participates in skill improvement and offensive game strategies & Practice	**04**

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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y. B. Tech Sem I
Course Code and Course Title	1FTVA110E ,**Yoga**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110E_1	Discus importance of Yoga with respect to different forms of exercise.
1FTVA110E_2	Perform Different styles of Yoga.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction , importance of yoga, Basic exercise, sun salutation, shavasana taught yogic & excises types	**03**
Unit 2	Omkar& sleeping position seats (aasn yogic excise type)to teach omkar in a scientific way, to teach mercatasan , makrasan, setubandhan,	**04**
Unit 3	Opposite sleeping position. Shalabhasan , chakras an, Bhungasan, Makrasan.Pranayam;- Amulom Vilom,,Bhasarika, Sheetkari, Bhramari, shitalipranayam. Rapid respiration(jaladshwasan)	**05**
Unit 4	Practice sessions	**04**
Unit 5	Seats in the sitting position:-padmasan, Wajrasan, Wakrasan, Ardh-machindrasana, Urshtrasan.	**04**
Unit 6	Seats in Fine Position. (Dandstithi):- Ekpaadvrukrashasan, Veerasan, Patangasan,Trikonasan.	**03**

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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y. B. Tech Sem I
Course Code and Course Title	1FTVA110F , **Indian Folk Dance**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110F_1	Discuss different types in Indian Folk dance..
1FTVA110F_2	Demonstrate Navras Abhinay, Tribal dance, Dhangari & Lavni dance.
1FTVA110F_3	Compose dance on different folk dance style.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Indian Folk dance& its forms.	**02**
Unit 2	Basic steps of folk dance styles.	**03**
Unit 3	Importance of expressions (Acting) in dance, Navras Abhinay & its types .(9 type of navras)	**03.**
Unit 4	Tribal dance,& its different styles.	**07**
Unit 5	Practice sessions.	**04**
Unit 6	History of Dhangari & Lavni dance. Types of dhangari & lavni dance.	**01**
Unit 7	Steps (dance composition) of Dhangari & Lavni dance.	**08**
Unit 8	Practice sessions & Students performance	**04**

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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y. B. Tech Sem I
Course Code and Course Title	1FTVA110G, **Western Dance**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110G_1	Describe History of Western dance & basic of western dance.
1FTVA110G_2	Organize western dance individually as well as group with help of western music.
1FTVA110G_3	Compose western dance on songs.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	History of Western dance style & information about western dance.	**02**
Unit 2	Basic types of western dance :- worm-up, Hand- legs movements.	**04**
Unit 3	Teaching Basic style (focus on dance / music / movements, how to control body,emotion/feeling of music/ dance.)	**06**
Unit 4	Training western dance with music (original dance form of western, free style dance)	**08**
Unit 5	Dance composition.	**05**
Unit 6	Practice session , & Students Presentation	**05**

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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y. B. Tech Sem I
Course Code and Course Title	1FTVA110H,**Karaoke Singing.**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA110H_1	Understand notation of the songs.
1FTVA110H_2	Perform happy , sad , love deviational , patriotic songs.
1FTVA110H_3	Compose songs in many variations.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Song Notation	**04**
Unit 2	Happy song / Sad song (classical & semi classical)	**08**
Unit 3	Love song / Deviational song / Patriotic songs	**08**
Unit 4	Song composition	**05**
Unit 5	Practice session & students presentation	**07**

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Teaching and Evaluation Scheme
F.Y.B.Tech.: Semester-II

Course Code	Course	Teaching Scheme				Evaluation Scheme				
						Scheme	Theory (Marks)		Practical (Marks)	
		L	T	P	Credits		Max.	Min. for Passing	Max.	Min. for Passing
1FTBS111	Applied Mathematics-II	3	1	--	4	ISE MSE ESE	40 30 30	16 24 40		
1FTES112	Applied Chemistry-II	3	--	--	3	ISE MSE ESE	40 30 30	16 24 40		
1FTPC113	Engineering Thermodynamics	3	1	--	4	ISE MSE ESE	40 30 30	16 24 40		
1FTES114	Engineering Graphics	2	--	--	2	ISE MSE ESE	40 30 30	16 24 40		
1FTES115	Programming for problem Solving	1	--	2	2	ISE ESE	-- POE	--	50 50	20 20
1FTHS116	Professional Communication Skill	--	--	4	2	ISE	--	--	50	20
1FTES117	Applied Chemistry-II Laboratory	--	--	2	1	ISE	--	--	50	20
1FTES118	Engineering Graphics Laboratory	--	--	2	1	ISE	--	--	50	20
1FTVA119	Value Added Course-2	--	--	2	1	ISE	--	--	50	20
	Total	**12**	**2**	**12**	**20**	**Total**	**400**		**300**	
Total Contact Hours/Week: 26 hrs						**Total Marks = 700**				

Course Category	HS	BS	ES	PC	PE	OE	PR	VAC
Credits	02	08	09	00	00	00	00	01
Cumulative Sum	02	20	16	00	00	00	00	02

Value Added Course-2: Singing, Drama, Dance, Sports

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F.Y. B.Tech. – Food Technology

Course Details:

Class	F.Y. B. Tech, Sem.-II
Course Code and Course Title	1FTBS111, **Applied Mathematics- II**
Prerequisite/s	---
Teaching Scheme: Lecture/Tutorial / Practical	03/01/00
Credits	04
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes: After successful completion of this course, the students will be able to:	
1FTBS111_1	**Solve** problems on partial derivatives by using fundamental concepts of derivative and apply it to find Jacobian, Maxima and Minima of functions of several variables.
1FTBS111_2	**Solve** Ordinary Differential Equation by using analytical method and numerical techniques.
1FTBS111_3	**Use** technique of finite difference and interpolation to compute the value of function for given data.
1FTBS111_4	**Apply** the concept of Special Functions to evaluate improper integrals.
1FTBS111_5	**Evaluate** proper and improper type of multiple integrals by using fundamental concepts of integration and apply it to find Area and Mass of a given region.

Unit no	Content	Hrs.
Unit 1	**Partial Differentiation and Its Applications:** Function of two or more variables, Partial derivatives, Euler's theorem, Change of variables, Jacobin, Maxima and minima of functions of two variables.	08
Unit 2	**Ordinary Differential Equation (First order and First degree):** Linear differential equation, Equation reducible to linear differential equation, Exact differential equation, Equation reducible to exact equation.	07
Unit 3	**Numerical Solution of Ordinary Differential Equation (First order and First degree):** Picard's method, Taylor's series method, Euler's method, modified Euler's method, Runge-kutta method.	06
Unit 4	**Finite Differences and Interpolation:** Finite differences, Newton's Interpolation formulae, central difference interpolation formulae (stirling formula), interpolation with unequal interval (Lagrange's formula)	06
Unit 5	**Special Functions:** Gamma function, Properties of Gamma function, Beta function, Properties of Beta function, Relation between Beta and Gamma functions.	07
Unit 6	**Multiple Integral and Its Applications:** Double Integrals, Triple integral, Change of Order of Integration, Change to polar, Applications to Area and Mass of plane lamina.	08

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Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Higher Engineering Mathematics	Dr. B. S. Grewal	KhannaPublishers	44th	2018
02	Advanced Engineering Mathematics	N. P. Bali, Manish Goyal	Infinity science press	7th	2010
03	Advanced Engineering Mathematics	H. K. Das	S. Chand	22nd	2018
04	Numerical Methods in Engineering & Science	Dr. B. S Grewal	KhannaPublishers	9th	2010

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	A textbook of Applied Mathematics	P. N. Wartikar& J. N. Wartikar	Pune VidyarthiGrihaPrakashan	1st	2008
02	Higher Engineering Mathematics	B. V. Ramana	Tata McGraw Hill Publ.	6th	2010
03	Advanced Engineering Mathematics	Erwin Kreyszig	Wiley Publishers	10th	2017
04	Numerical Methods	Dr. P. Kandasamy, Dr. K. Thilagavathy, Dr. K. Gunavathi	S. Chand	1st	2010

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F.Y. B.Tech. – Food Technology

Course details

Class & Semester	F.Y., B.Tech. Sem-II
Course Code and Course Title	1FTES112, **Applied Chemistry-II**
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial / Practical	03/ 00/00
Credits	03
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes (COs): Upon successful completion of this course, the students will be able to:	
1FTES112_1	**Discuss** concepts of aromaticity and chemistry of aromatic compounds in organic reactions using fundamental laws.
1FTES112_2	**Classify** reactive intermediates to study general reactions on the basis of structure, stability and generation.
1FTES112_3	**Identify** possible separation techniques for analysis of food products using chromatographic methods.
1FTES112_4	**Compute** the mean, median, absolute and relative errors from a set of measurements by using basic equations.
1FTES112_5	**Summarize** applications of various analytical techniques for food analysis using spectral methods.

Course Contents:		**Hrs.**
Unit 1	**Aromaticity:** Introduction, Characteristic properties of aromatic compounds, Meaning of important terms- Aromatic, Non-aromatic, anti-aromatic, pseudo aromatic, Structure of Benzene, Modern theory of Aromaticity, Huckel's rule and its applications, Mechanism of electrophilic aromatic substitution and aromatic nucleophillic substitution reaction.	**07**
Unit 2	**Aromatic compounds:** Sources, Positional isomerism in substituted arenes. Orienting influence of substitutents, Mechanisms of Friedel-Crafts alkylation and acylation reactions, nitration, halogenations, sulphonation, chlorosulphonation, **Cycloalkanes-** Nomenclature and Formation by Diel's- Alder reaction reactions.	**07**
Unit 3	**Fundamentals of organic reaction mechanisms**: Introduction, Reactive intermediates- carbocations, carbanions, free radicals, carbenes, nitrenes, benzynes; their introduction, generation, structure, stability and general reactions.	**07**
Unit 4	**Introduction to Analytical Chemistry:** **Introduction-** Analytical procedures-hazards and handling, treatment of waste, good laboratory practices (GLP). **Aspects of analysis:** Errors- systematic and random errors, statistical treatment of experimental results- Determination of significant figures, mean, median, absolute and relative errors.	**07**
Unit 5	**Chromatographic and other separation methods:** Paper, thin layer chromatography (TLC), HPLC, ion exchange and size exclusion chromatography, super critical fluid extraction (SCF).	**07**
Unit 6	**Molecular spectral methods:** UV-visible, Molecular fluorescence- Jablonski diagram, it's significance, fluorescence measurement, applications, Introduction to IR spectroscopy, FT-IR, Mass spectroscopy and it's applications.	**07**

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Text book of Practical Organic Chemistry	Arthur I. Vogel	Pearson Education	5th	2011
02	Textbook of Organic Chemistry Vol-I, Vol-II, Vol-III	Ahluwalia V.K.	Ane Books Pvt Ltd, New Delhi	1st	2010

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Organic Chemistry	J. McMurry	Cengage Learning	8th	2011
02	Organic Chemistry	L.G. Wade Jr	Pearson Education	9th	2017
03	Organic Chemistry	Morrison Robert Thornton	Pearson Education South Asia	7th	2012
04	Fundamentals of Analytical Chemistry	Holler F.J., CrouehS.R.	CengageLearing India Pvt. Ltd New Delhi	9th	2014
05	Instrumentation Methods of Chemical Analysis	ChatwalGurdeep R , Anand Sham K.	Himalaya Publishing House, New Delhi.	5th	2005
06	Introduction to Spectroscopy	Pavia D L , Lampman G M and KrizG S	CengageLearing India Pvt. Ltd. New Delhi :	5th	2017

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F.Y. B.Tech. – Food Technology

Course Details:

Class:	F.Y. B.Tech Sem II
Course Code and Course Title:	1FTPC113, **Engineering Thermodynamics**
Prerequisite/s:	Applied Mathematics, Applied Physics , Applied Chemistry
Teaching Scheme: Lecture/Tutorial/Practical	03/01/00
Credits:	04
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes: After successful completion of this course, students will able to	
1FTPC113_1	Differentiate types of systems and its thermodynamic properties
1FTPC113_2	Apply thermodynamic property relationships to given system
1FTPC113_3	Evaluate various thermodynamic properties for a given system with its parameters
1FTPC113_4	Analyze given thermodynamic system for its properties
1FTPC113_5	Quantify the behavior of substances in terms of its thermodynamic properties
1FTPC113_6	Interpret thermodynamic data for food processing applications

Course Contents:		**Hrs.**
Unit 1	**First Law and basic concepts** Basic: Scope & limitation of thermodynamics, Dimension & Units, force, temperature, pressure, work, energy and heat, properties- extensive, intensive, dependent/independent. First law of thermodynamics: heat & work, reversible & irreversible process. Closed systems, internal energy, enthalpy, heat capacity, open systems, latent heat.	**07**
Unit 2	**Volumetric properties of pure fluids:** P-V-T behavior of pure substances, virial equation of state, ideal gas temperature, universal gas constant, the ideal gas & equations for various processes, application of the virial equation. The vanderwaal equation of state, concept of supercritical temperature.	**07**
Unit 3	**Second law of thermodynamics:** Second law of thermodynamics & entropy: reversibility, irreversibility, entropy, the second law of thermodynamics, thermodynamic cycles: carnot & renkine cycles, entropy changes of an ideal gas, significance of entropy in food industry	**07**
Unit 4	**Solution thermodynamics:** Partial properties, Equations relating molar and partial molar properties, partial properties in binary solutions, relations among partial properties, problems, ideal gas mixture.	**07**
Unit 5	**Phase equilibrium**: Phase equilibria, fugacity: definition, fugacity in vapor phase, fugacity coefficients, mixing of ideal gases, criteria of phase equilibrium. Liquid-liquid equilibrium, solid-liquid equilibrium, solid-liquid equilibrium in food processes analysis of mixing & separation processes	**07**
Unit 6	**Chemical reaction equilibrium:** Equilibrium of single reaction, application of equilibrium criteria to chemical reactions. Gibbs phase rule, the standard gibbs energy change & the equilibrium constant & their temperature. Evaluation of equilibrium constant.	**07**

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1.	Introduction to Chemical Engineering Thermodynamics	Smith, van ness, Abbott	McGraw-Hill Companies, inc., Series in Chemical Engineering	8th	2018
2.	Thermodynamics of phase Equilibria in Food Engineering	CamilaGambini Pereira	Academic Press	1st	2018
3	Chemical, Biochemical & Engineering Thermodynamics	S.I Sandler	Wiley a. publications	5th	2017

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
1.	Phase equilibria in Chemical Engineering	S. M. Walas	Buttorworth publishers	1st	1985
2.	Chemical Engineering Thermodynamics	K. V. Narayan	Prentice Hall India, New Delhi	2nd	2013

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FY-FT-32/50

Course Details:

Class	F. Y. B. Tech, Sem.-II
Course Code and Course Title	1FTES114, **Engineering Graphics**
Prerequisite/s	---
Teaching Scheme: Lecture/Tutorial / Practical	02/00/00
Credits	02
Evaluation Scheme: ISE/ MSE/ESE	40/30/30

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTES114_1	Explain basic concepts in drawing and its application.
1FTES114_2	Sketch projection of simple geometries.
1FTES114_3	Sketch projection of solids.
1FTES114_4	Prepare sectional views of solids & develop the lateral surfaces of solids.
1FTES114_5	Sketch the Orthographic projections.
1FTES114_6	Prepare the Isometric view of simple objects.

Course Contents:		**Hrs**
Unit 1	**Fundamentals of Engineering Graphics and Engineering Curves** **A) Fundamentals of Engineering Graphics:** Introduction to Drawing instruments and their uses. Different types of lines used in drawing practice, Dimensioning system as per BSI (Theoretical treatment only) **B) Engineering curves:** Construction of regular Polygons up to hexagon). Ellipse, Parabola, Hyperbola, Involute, Archimedean spiral, Cycloid.	**04**
Unit 2	**Projections of Lines and Planes** **A) Projections of Lines:** Introduction to First angle and third angle methods of projection. Projections of points on regular and auxiliary reference planes. Projections of lines (horizontal, frontal, oblique and Profile lines) on regular and auxiliary reference planes. True length of a line, Point View of a line, angles made by the line with reference planes. Projections of intersecting lines, Parallel lines, perpendicular lines, and skew lines. Grade and Bearing of a line. **B) Projections of Planes:** Projections on regular and on auxiliary reference planes. Types of planes (horizontal, frontal, oblique and Profile planes), Edge view and True shape of a Plane. Angles made by the plane with Principle reference planes. Projections of plane figures inclined to both the planes (Circle & regular polygon).	**05**
Unit 3	**Projections of Solids** Projections of Prisms, Pyramids, Cylinder and Cones inclined to both reference planes. (Excluding Frustum and Sphere)	**04**
Unit 4	**Orthographic Projections** Lines used, selection of views, dimensioning and sections. Drawing required views from given pictorial views (conversion of pictorial views in to orthographic views), including sectional orthographic views.	**06**
Unit 5	**Isometric Projections** Introduction to isometric. Isometric scale, Isometric projections and Isometric views /drawings. Circles in isometric view. Isometric views of simple solids and objects.	**05**
Unit 6	**Sections of Solids and Development of surfaces:** **A) Sections of solids:** Prisms, Pyramids, Cylinders and Cones in simple positions and inclined to one reference plane and parallel to other. **B) Development of plane and curved surfaces:** Prisms, Pyramids, Cylinders and Cones along with cutting planes.	**04**

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Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing,	N. D. Bhatt	Charotor Publication House, Bombay	53rd	2014
02	Engineering Drawing	Dhananjay A. Jhole	Tata McGraw Hill International	5th	2011
03	Engineering Graphics with an Introduction to computer aided Profting.	H. G. Phakatkar	Nirali Publication	7th	2006
04	Engineering Graphics	Agrawal B.	TMH Publication	3rd	2012

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing and Graphics	K. Venugopal	New Age Publication	5th	2004
02	Machine Drawing	K. L. Narayana	New Age Publication	3rd	2006
03	Engineering Drawing	N. B. Shaha and B. C. Rana	Pearson Education	2nd	2012
04	Fundamentals of Engineering Drawing	W. J. Luzadder	Prentice Hall of India.	1st	1964

Other Books/E-material

Sr. No	Title	Author	Publisher
01	NPTEL video lectures	NPTEL Author	www.nptel.ac.in

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FY-AT-34150

Course Details:

Class	F. Y. B. Tech., Sem-II
Course Code and Course Title	1FTES115, **Programming for problem solving**
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial / Practical	01/00/02
Credits	02
Evaluation Scheme: ISE /ESE	50/50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTES115_1	**Demonstrate** structured approach to solve a problem.
1FTES115_2	**Explain** C programming fundamentals.
1FTES115_3	**Illustrate** concepts like array, functions, structures, and pointers and file handling in C Programming language.
1FTES115_4	**Apply** C Programming constructs to solve a given problem.
1FTES115_5	**Prepare** and present a power point presentation on assigned topic.

Course Contents:		
Unit 1	**Computer Fundamentals with Basics of Programming** Introduction to Computer, Computer System Hardware, Input and Output Devices, The meaning of algorithms, Flowcharts, Pseudo codes, Writing algorithms and drawing flowcharts for simple exercises, Memory concepts, C Program development environment.	**04 Hrs**
Unit 2	**C Fundamentals** Importance of 'C' Language, History, Structure of 'C' Program, Sample 'C' Program, Constants, variables and data types. Operators and expressions, Managing input / output operations, Control statements-Decision making, Case control & Looping Constructs.	**05 Hrs.**
Unit 3	**Array** The meaning of an array, one dimensional and two dimensional arrays, declaration and initialization of arrays, reading , writing and manipulation of above types of arrays, multidimensional arrays. Strings-Declaring and initialing character array, reading and writing string to/from terminal, arithmetic operations on characters, putting strings together, and string handling functions.	**04 Hrs.**
Unit 4	**Functions** Need of user defined functions, elements of User defined functions, defining functions, return values and their types, function calls, function declaration, methods of parameter passing, Scope rule of functions, user defined and library functions.	**04 Hrs.**
Unit 5	**Structure & Pointers** Need of Structure, Defining a structure, declaring and accessing structure variables, structure initialization, copying and comparing structure variables, array of structures, structures and functions, Unions. Understanding pointers, accessing the address space of a variable, declaring and initialization pointer variables, accessing a variable through its pointer, pointer expressions, pointers and arrays, pointer and character strings, pointer and structure	**04 Hrs.**
Unit 6	**File Handling** Defining and opening a file, closing a file, input/output operations on files, error handling during I/O operations, random access files.	**05 Hrs.**

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FY-FT-35/50

Practical Experiments: It should consist of minimum 8-10 experiments based on following list

Expt. No.	Title of Experiments
1	Write an algorithm and draw flowchart for given problem statement.
2	Implement a program using different data types and operators in C.
3	Implement a C program using Decision control statement.
4	Implement a C program using Repetitive control statement.
5	Implement a Program to demonstrate 1d and 2d Array.
6	Implement a program to demonstrate String handling functions
7	Implement a Program to demonstrate user-defined function in C.
8	Implement a Program to demonstrate recursion in C(factorial, Fibonacci).
9	Implement a program to demonstrate pointer and pointer arithmetic in C.
10	Implement a program to demonstrate file handling

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Programming And Problem Solving Using C Language	ISRD Group	McGraw-Hill Publications	Second	2012
02	Let Us C	Yashwant Kanetkar	BPB	Third	2011
03	C How to Program	Harvey M. Deitel, Paul J. Deitel, Abbey Deitel	Pearson	Second	2009
04	Programming in ANSI C	E. Balguruswamy	Tata Mc-Graw Hill	Fourth	2008

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	The 'C' Programming Language	D. M. Ritchie	Pearson	Second	1998
02	C Programming Laboratory: Handbook for Beginners	Sidnal	Wiley India Limited	First	2012
03	The Complete Reference C	Herbert Schildt	McGraw-Hill Publications	Fourth	2000
04	Test your C Skills	Yashwant Kanetkar	BPB Publications	Fifth	2013

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Course details:

Class	F. Y. B. Tech. Sem-II
Course Code and Course Title	1FTHS116, **Professional Communication skill**
Prerequisite/s	12th Standard English Grammar
Teaching Scheme: Lecture/Tutorial / Practical	00/00/04
Credits	02
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTHS116_1	Exhibit the skill of sentence construction considering the frame of English language rules accurately for effective and sound communication.
1FTHS116_2	Present their portfolio confidently considering SWOT analysis by using digital tools convincingly as per the corporate expectations.
1FTHS116_3	Write formal letters proficiently by following required techniques that helps in maintaining professional affairs at workplace.
1FTHS116_4	Produce professional presentations proficiently on assigned topics in convincing manner using necessary tools and techniques.
1FTHS116_5	Justify own role in communicative events with balanced zeal, in well-organized manner.

Expt. No.	Title of the Experiment
01	Checking My English Communication
02	Self – Introduction
03	Presenting my Career Choices
04	Preparing my Portfolio
05	Understanding Sentence Pattern
06	Avoiding Common Errors
07	Presenting My Portfolio
08	Note Making
09	Getting Smart with Technical Description of charts/ Images/ Processes
10	Delivering Professional Presentation
11	Application and Resume Writing
12	Email Writing
13	GD (General)
14	Introducing Guest/ Friend
15	Extempore
16	GD (Technical)
17	Mock Interview
18	Organizing Event

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Textbook					
Sr. No	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
1	The Professional: Defining the New Standard of Excellence at Work	SubrotoBagchi	Penguin Books India Pvt. Ltd.	Revised Edition	2011
2	Cambridge Guide to IELTS	Pauline Cullen, Amanda French	Cambridge University Press	Reprint	2017
3	A Practical Course in Effective English Speaking Skills	J. K. Gangal	PHI Learning Private Limited, New Delhi	Print	2012
4	Personality Development and Soft Skills	Barun K. Mitra	Oxford University Press, New Delhi , India	7th	2012

Reference Books					
Sr. No	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
1	High-school English Grammar and Composition	Wren and Martin	S. Chand and Co., New Delhi	1st	2015
2	The Ace of Soft Skills	AjaiChowdry, BalaBalchandran	Pearson Publication, Delhi	8th	2013
3	Effective Technical Communication	M. Ashraf Rizvi	McGraw Hill Education, Chennai	2nd	2017
4	Business Communication	HorySankarMukerjee	Oxford University Press, New Delhi , India	2nd	2013

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FY-FT-38/50

Course details:

Class	F.Y., B.Tech. Sem-II
Course Code and Course Title	1FTES117, **Applied Chemistry -II Laboratory**
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial / Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the students will be able to:	
1FTES117_1	Categorize the unknown organic compounds accurately with the help of different tests.
1FTES117_2	Summarize some methods of organic quanlitative analysis using standard tests.
1FTES117_3	Analyze given materials accurately for choosing them in domestic and industrial applications with the help of various instruments.
1FTES117_4	Communicate effectively about laboratory work both orally and writing.
1FTES117_5	Practice professional and ethical behavior to carry forward in their life.

Expt. No.	Title of Experiment
1.	**Qualitative analysis of organic compounds :** Compound No :1
2.	**Qualitative analysis of organic compounds :**Compound No : 2
3.	**Qualitative analysis of organic compounds :**Compound No : 3
4.	**Qualitative analysis of organic compounds :**Compound No : 4
5.	**Qualitative analysis of organic compounds :**Compound No : 5
6.	Acid-base titration using potentiometer.
7.	Determination of strength of given hydrochloric acid using pH meter.
8.	Determination of strength of acids in a mixture of acids using conductivity meter.
9.	Estimation of iron content of the given solution using potentiometer.
10.	Determination of Iron in a water sample by colorimetry.
11.	Determination of calcium from given sample.
12.	Determination of unknown concentration of sample by colorimetry.

Minimum 8 experiments should be performed from the list.

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Text books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Vogel's Textbook of Practical Organic Chemistry	Furniss Brian S. Furniss Brian S.	Earson Education In South Asia,	5th	2011
02	A Text Book On Experiments And Calculation In Engineering Chemistry	Dara S.S.	S. Chand & Company Ltd. New Delhi	1st	2008
03	Laboratory Manual For Engineering And Physical Chemistry	RaoMandava V.	Studiam Press(India) Pvt.Ltd	1st	2013
04	Practical Engineering Chemistry	Srinivasan V.	Scitech Publications Pvt Ltd	1st	2003

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Skoog And Wests Fundamentals of Analytical Chemistry	Holler,F.J., Croueh,S.R.	CengageLearing India Pvt. Ltd	9th	2014
02	Instrumentation Methods Of Chemical Analysis (Analytical Chemistry)	ChatwalGurdeep R, Anand Sham K.	Himalaya Pub. House	5th	2005
03	Elementary Practical Organic Chemistry Part-II	Vogel Arthur I	Pearson Education South Asia,	2nd	2011

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Sant Dnyaneshwar Shikshan Sanstha's

Annasaheb Dange College of Engineering and Technology, Ashta

(An Autonomous Institute)

F.Y. B.Tech. – Food Technology

Course details:

Class	F. Y. B. Tech, Sem.-II
Course Code and Course Title	1FTES118, **Engineering Graphics Laboratory**
Prerequisite/s	---
Teaching Scheme: Lecture/Tutorial / Practical	00/00/02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTES118_1	Draw the projections the different lines, Planes and Solids in different positions, develop the lateral surface of object.
1FTES118_2	Draw orthographic, sectional and isometric views.
1FTES118_3	Use/Handle different engineering drawing instruments accurately & carefully.
1FTES118_4	Produce drawings with accuracy and proficiency.
1FTES118_5	Display a high degree of certainty in drawings and projections of complex components.

Laboratory Plan

Expt. No.	Title of Experiment
1	Introduction
2	Types of Lines and Lettering.
3	Engineering Curves
4	Projections of Straight lines and Projections of Planes (2 Sheets)
5	Projections of Straight lines and Projections of Planes (2 Sheets)
	Revision – I
6	Projections of Solids
7	Orthographic projections (Sheet 1)
8	Orthographic projections (Sheet 2)
9	Isometric projections
10	Sections of Solids
11	Development of Lateral Surface
12	Revision – II
	Submission

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FY-FT-41/50

Text books:

Sr. No	Title	Author	Publisher	Edition	Year of edition
01	Engineering Drawing,	N. D. Bhatt	Charotor Publication House, Bombay	53rd	2014
02	Engineering Drawing	Dhananjay A. Jhole	Tata McGraw Hill International	5th	2011
03	Engineering Graphics with an Introduction to computer aided Drafting.	H. G. Phakatkar	Nirali Publication	7th	2006
04	Engineering Graphics	Agrawal B.	TMH Publication	3rd	2012

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing and Graphics	K. Venugopal	New Age Publication	5th	2004
02	Machine Drawing	K. L. Narayana	New Age Publication	3rd	2006
03	Engineering Drawing	N. B. Shaha and B. C. Rana	Pearson Education	2nd	2012
04	Fundamentals of Engineering Drawing	W. J. Luzadder	Prentice Hall of India.	1st	1964

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Text books:

Sr. No	Title	Author	Publisher	Edition	Year of edition
01	Engineering Drawing,	N. D. Bhatt	Charotor Publication House, Bombay	53rd	2014
02	Engineering Drawing	Dhananjay A. Jhole	Tata McGraw Hill International	5th	2011
03	Engineering Graphics with an Introduction to computer aided Drafting.	H. G. Phakatkar	Nirali Publication	7th	2006
04	Engineering Graphics	Agrawal B.	TMH Publication	3rd	2012

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Drawing and Graphics	K. Venugopal	New Age Publication	5th	2004
02	Machine Drawing	K. L. Narayana	New Age Publication	3rd	2006
03	Engineering Drawing	N. B. Shaha and B. C. Rana	Pearson Education	2nd	2012
04	Fundamentals of Engineering Drawing	W. J. Luzadder	Prentice Hall of India.	1st	1964

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Sant Dnyaneshwar Shikshan Sanstha's

Annasaheb Dange College of Engineering and Technology, Ashta

(An Autonomous Institute)

F.Y. B.Tech. – Food Technology

Course Details: Value Added Course II

Class	F.Y. B.Tech, Sem.-II
Course Code and Course Title	1FTVA119A, **Table –Tennis**
Prerequisite/s	--
Teaching Scheme: **Practical**	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119A_1	The students define table tennis game.
1FTVA119A_2	Willingly participates in Table Tennis as a component of an active lifestyle.
1FTVA119A_3	The students explain foot- work in forehand and backhand spin.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction & Understand basic Table Tennis rules, terminology, safety concerns, and scoring procedures.	**04**
Unit 2	Demonstrate proper court etiquette and good sportsmanship.	**06**
Unit 3	Demonstrate basic skills associated with table tennis including forehand, backhand, spins, grips & serves.	**05**
Unit 4	Demonstrate Exposition and Applying forehand and backhand straight strike.	**05**
Unit 5	Assess current personal fitness levels & Practice.	**06**
Unit 6	Use a variety of stroke placements to keep opponent moving during a table tennis match. Practice.	**04**

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FY-FT-43/50

Course Details:

Class	F.Y, B.Tech, Sem.-II
Course Code and Course Title	1FTVA119B, **Kho-Kho**
Prerequisite/s	------
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119B_1	Helps In Motor Development.
1FTVA119B_2	It helps in social and mental development of the student
1FTVA119B_3	Kho-Kho helps the student to off depression, anxiety, stress and, increase self-esteem.
1FTVA119B_4	It develops team spirit and leadership skill.
1FTVA119B_5	It improves physical fitness.

Course Contents:

Unit No.	Tittle	Hrs.
Unit 1	Introduction to Kho-Kho – Aim – Objectives – Short reference in Kho-Kho history Understand the basic rules and how they should play normal game.	**04**
Unit 2	Demonstrate basic skills associated with Kho-Kho, including Fundamental Skills. 1) Chasing Skills- a)Giving Kho b) Taking Direction c) Sudden Change d) Tapping	**06**
Unit 3	Demonstrate basic skills associated with Kho-Kho, including Fundamental Skills. Chasing Skills-e)Turning Round the Post f) Trapping g) Diving h) Fake Kho i) Late kho& Practice.	**05**
Unit 4	Demonstrate basic skills associated with Kho-Kho, including Running Skills a)Position on the court b) Avoiding Trapping c) Positioning near post d) Dodging	**05**
Unit 5	Demonstrate basic skills associated with Kho-Kho, including Running Skills e)Front Dodge f) Back Dodge c) Round the post dodge & Practice	**06**
Unit 6	Kho-Kho Skills Practice & Matches.	**04**

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FY-FT-44/50

Course Details:

Class	F.Y,B.Tech, Sem.-II
Course Code and Course Title	1FTVA119C, **Basket ball**
Prerequisite/s	------
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119C_1	Introduce students to the basic skills and knowledge associated with basketball.
1FTVA119C_2	By applying these principles through active participation, students develop the necessary skills and knowledge to play basketball
1FTVA119C_3	provides students with opportunities to improve physical fitness, acquire knowledge of fitness concepts and practice positive personal and social skills
1FTVA119C_4	Students will gain an understanding of how a wellness lifestyle affects one's health, fitness and physical performance.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction & Understand basic basketball rules, terminology, and safety concerns.	**04**
Unit 2	Demonstrate the six basic basketball skills of a) Running b) Jumping c) Passing d) catching e) Dribbling and f) Shooting.	**06**
Unit 3	Demonstrate the ability to perform individual offensive and defensive skills and strategies.	**05**
Unit 4	Understand and apply the knowledge of basic rules of basketball. Skills Practice.	**05**
Unit 5	Demonstrate proper etiquette and good sportsmanship. Successfully participates in skill improvement and offensive game strategies.	**06**
Unit 6	Identify and apply injury prevention principles related to aerobic activities. Practice & Matches.	**04**

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FY-FT-45/50

Course Details:

Class	F.Y, B.Tech, Sem.-II
Course Code and Course Title	1FTVA119D, **Hand Ball**
Prerequisite/s	------
Teaching Scheme: **Practical**	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119D_1	The student has a basic knowledge of the team values of sports games
1FTVA119D_2	Acquainting with the characteristics and trends in the development of the discipline.

Course Contents:

Unit No.	Title	Hrs.
Unit1	Introduction & Understand basic Handball rules, terminology, and safety concerns.	**04**
Unit2	Health and safety rules. Rules for obtaining credit for the course, Reminder of the history, methodology and basic rules of the game, Exercises to improve passing, grips and throws. The game. Reminder of the refereeing rules.	**06**
Unit3	Improving the technique of passing and grips in a team setting. Individual ways of freeing oneself from the opponent and the organization of positional attacks with their use	**05**
Unit4	Exercises improving feints and individual defense technique. Everyone's defense system. Principles of individual defense & Practice.	**05**
Unit5	Improving the technique of passing and grips in a team setting. Individual ways of freeing oneself from the opponent and the organization of positional attacks with their use. The game & Practice.	**06**
Unit6	Identify and apply injury prevention principles related to aerobic activities. Practice & Matches	**04**

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FY-FT-46/50

Course Details:

Class	F.Y. B. Tech, Sem II
Course Code and Course Title	1FTVA119E, **Katthak Classical Dance**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119E_1	Explain Importance of katthak with respect to Indian culture.
1FTVA119E_2	Demonstrate Guruvandana ,Tatkar.
1FTVA119E_3	Compose Katthak dance with consideration of classical & semi classical music.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Introduction to Classical dance katthak & its importance.	01
Unit 2	Guruvandana &Tatkaar .(teen taal)	03
Unit 3	Chakri & Hast-sanchalan	03
Unit 4	Tode . (Tigida-tigdig-thai)	03
Unit 5	Practice sessions.	02
Unit 6	Paran & Tihaei	05
Unit 7	Classical dance on Song	05
Unit 8	Practice sessions.	08

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FY-FT-47/50

Course Details:

Class	F.Y. B. Tech, Sem II
Course Code and Course Title	1FTVA119F,**Bharatnatyam Classical Dance**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119F_1	Interpolation of Indian classical dance forms & basic types of Bharatnatyam.
1FTVA119F_2	Subdivide bharatnatyam in terms of Nrutt, Nrutya & Nattya.
1FTVA119F_3	Show the perform base on signal & combine hand posture in terms of Ganesh Vandana & Mahalaxmi Ashtak

Course Contents:

Unit No.	Title	Hrs.
Unit 1	History of Bharatnatyam Dance style & information about all Indian classical dance forms.	**01**
Unit 2	Basic types of Bharatnatyam :- Tatty Advu, Natty advu, Vishruadvu, KudditMettadvu, Mettadvu, tattikudditmettadvu&Tirmanam (small). Study of NavrasAbhinay. Singal Hand posture , Footwork , Shirobhed(head movement),	**12**
Unit 3	Combine Hand posture. Meaning of Guruvandna, Ganesh ,mahalaxmishlok. Definition of Nrutt, Nrutya&Nattya.	**06**
Unit 4	Practical session of GaneshvandnaShlok in classical music.	**06**
Unit 5	Practice Sessions. & Presentation Of Ganesh vandna	**07**

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FY-FT-48150

Course Details:

Class	F.Y. B. Tech, Sem II
Course Code and Course Title	1FTVA119G ,**Harmonium Classical Music**
Prerequisite/s	-------
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119G_1	Outline in History Harmonium & different Raags.
1FTVA119G_2	Perform on different songs
1FTVA119G_3	Role play the different music by means of harmonium.

Course Contents:

Unit No.	Title	Hrs.
Unit 1	History & Introduction of Harmonium.	**02**
Unit 2	Harmonium presentation of Raag :-Bhoopraag, / Bhimpalashraag.	**12**
Unit 3	Practice sessions.	**03**
Unit 4	Practice song notations & Harmonium Dhoon (percussion)	**08**
Unit 5	Practice sessions & students presentations	**05**

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FY-FT-49/50

Course Details:

Class	F.Y. B. Tech, Sem- II
Course Code and Course Title	1FTVA119H,**Tabla Classical instruments**
Prerequisite/s	--
Teaching Scheme: Practical	02
Credits	01
Evaluation Scheme: ISE	50

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
1FTVA119H_1	Discover History of table wadan.
1FTVA119H_2	Demonstration of different Taal in table wadan.
1FTVA119H_3	Develop notation on new music with help of table wadan. .

Course Contents:

Unit No.	Title	Hrs.
Unit 1	Hostory& Introduction to TablaWadan.	**01**
Unit 2	Tabla presentation of Taal. Tritaal/ Dadra/ Zaptaal/ Kerwa/ Bhajni	**05**
Unit 3	Practice sessions.	**06**
Unit 4	Practice with notation ,& Set one song with table	**08**
Unit 5	Practice sessions & students presentations.	**10**

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