IIIT RK Valley

Rajiv Gandhi University of Knowledge Technologies-AP

Pre-University Course (PUC)

Course Structure and Syllabus

Academic Year 2017-18

(R17 Batch Onwards)

COURSE STRUCTURE

PUC-I SEM-I					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
E111	English	4	2	2	0
M112	Mathematics	4	2	2	0
P113	Physics	4	2	2	1
C114	Chemistry	4	2	2	1
T115	Telugu	2	1	1	0
I116	Information Technology	0	1	1	0
B117	Biology (for MBiPC)	4	2	2	1
	Total	**18 (22)**	**10 (12)**	**10 (12)**	**2 (3)**
PUC-I SUM-I					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
	Remedial Courses for remedial students				
	Non-Credit Courses for no remedial students	0	a	b	c
PUC-I SEM-II					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
E121	English	4	2	2	0
M122	Mathematics	4	2	2	0
P123	Physics	4	2	2	1
C124	Chemistry	4	2	2	1
T125	Telugu	2	1	1	0
I126	Information Technology	0	1	1	0
B127	Biology (for MBiPC)	4	2	2	1
	Total	**18 (22)**	**10 (12)**	**10 (12)**	**2 (3)**
PUC-I SUM-II					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
	Remedial Courses for remedial students				
	Non-Credited Courses for no remedial students	0	a	b	c

PUC-II SEM-I					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
E211	English	4	2	2	0
M212	Mathematics	4	2	2	0
P213	Physics	4	2	2	1
C214	Chemistry	4	2	2	1
T215	Telugu	2	1	1	0
I216	Information Technology	2	1	1	0
B217	Biology (for MBiPC)	4	2	2	1
	Total	**20 (24)**	**12 (14)**	**12 (14)**	**2 (3)**
PUC-II SUM-I					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
	Remedial Courses for remedial students				
	Non-Credit Courses for no remedial students	0	a	b	c
PUC - II SEM-II					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
E221	English	4	2	2	0
M222	Mathematics	4	2	2	0
P223	Physics	4	2	2	1
C224	Chemistry	4	2	2	1
T225	Telugu	2	1	1	0
I226	Information Technology	2	1	1	0
B227	Biology (for MBiPC)	4	2	2	1
	Total	**20 (24)**	**12 (14)**	**12 (14)**	**2 (3)**
PUC-II SUM-II					
Course Code	**Name of the Course**	**No. of Credits**	**No. of Periods per Week**		
			L	**T**	**P**
	Remedial Courses for remedial students				
	Non-Credited Bridge Courses for all students	0	a	b	c
	Grand Total	**76 (92)**			

Rajiv Gandhi University of Knowledge Technologies

(A.P. Government Act 18 of 2008)
IIIT RK Valley, Vempalli (M), YSR Kadapa (Dist.) Andhra Pradesh-516330

Minutes of 3rd Internal BOS Meeting-English (Depastmental Academic Committee (DAC))

The Internal BOS Committee (DAC) for English has met on **16th December 2017** at IIIT-R.K.Valley and the following recommendations and resolutions have been made.

1. The syllabus of English for the students of P1S1 of 2017 batch has been ratified.

2. The syllabi of English for the students of P1S2, P2S1 and P2S2 of 2017 batch have been approved.

3. The syllabi of English for the students of P1S1, P1S2, P2S1 and P2S2 which will be effective from 2018 batch have been approved.

4. The external members of BOS have suggested to engage the students registered for Winter Semester in Minor individual or small group project work for a fortnight by involving and guiding them in the four skills viz. LSRW.

Sl. No.	Name of the Internal BOS Member	As	Designation	Signature
1	Dr. B. Konda Reddy	Chairman	Dean of Academics IIIT- R.K.Valley	
2	Dr. V.B. Chitra	External Member	Associate Professor Dept. of H&SS JNTU, Anantapuramu	
3	Prof. D.S. Kesava Rao	External Member	Professor Dept. of H&SS NIT, Warangal.	
4	Mr. K. Suresh Kumar	Internal Member	Mentor Dept. of English IIIT- R.K.Valley	
5	Miss. Sarita Rani	Internal Member	Mentor Dept. of English IIIT- R.K.Valley	16/12/017
6	Mr. Viswanadh Bisai	Convener	Lecturer Dept. of English IIIT- R.K.Valley	16/12/17

DEPARTMENT OF ENGLISH

Syllabus:

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S1 (2017)	E111	English	4	2-2-0

PUC-I SEM-I English Course plays a significant role in facilitating independent language learning using technology. The course aims at developing four important skills of language i.e., **Listening, Speaking, Reading and Writing (LSRW)**. In order to equip students with necessary training in listening, videos were taken from different sources like **INK talks, Ted talks, BBC News, ABC News, CNN News, TEDx, NDTV.** Listening to the videos would enable the students to comprehend the speeches of people with different accents. To improve the comprehending ability of the student's passages for reading comprehension were taken from different Newspapers such as **New York Times, The Hindu, Washington Post, Times of India, Economic Times, India Today.** To enrich vocabulary and to master the skill of writing students were encouraged to summarize the given reading and listening comprehension tasks.

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S2 (2017)	E121	English	4	2-2-0

Unit-I:
1.1: The Little Girl – Katherine Mansfield

Unit-II:
2.1: The Bond of Love – Kenneth Anderson

Unit-III:
3.1: Nelson Mandela Long Walk to Freedom – Nelson Rolihlahla Mandela
3.2: The Fun They Had – Isaac Asimov

Unit-IV:
4.1: Bepin Choudhury's Lapse of Memory – Satyajit Ray
4.2: A Short Monsoon Diary – Ruskin Bond

Unit-V:
5.1: The Best Christmas Present in the World – Michael Morpurgo

Unit-VI:
6.1: A Visit to Cambridge-Firdaus Kanga
6.2: Glimpses of India
Part-I: A Baker From Goa-Lucio Rodrigues
Part-II: Coorg-Lokesh Abrol

References:
1. Honeydew – Textbook in English for Class VIII (Core Course) – NCERT

2. Beehive – Textbook in English for Class IX (Core Course) – NCERT
3. First Flight – Textbook in English for Class X (Core Course) – NCERT
4. English Grammar – Wren & Martin
5. http://www.myenglishgrammar.com/

Year & Semester: P1S1 (2018 Onwards)	Course Code: E111	Course Name: English	No. of Credits: 4	L-T-P: 2-2-0

Unit-I:
1.1: Best Seller – O. Henry

Unit-II:
2.1: The Little Girl – Katherine Mansfield

Unit-III:
3.1: The Bond of Love – Kenneth Anderson
3.2: The Fun They Had – Isaac Asimov

Unit-IV:
4.1: Bepin Choudhury's Lapse of Memory – Satyajit Ray
4.2: A Short Monsoon Diary – Ruskin Bond

Unit-V:
5.1: The Best Christmas Present in the World – Michael Morpurgo

Unit-VI:
6.1: How I Taught My Grandmother to Read – Sudha Murthy
6.2: A Visit to Cambridge – Firdaus Kanga

References:
1. Honeydew – Textbook in English for Class VIII (Core Course) – NCERT
2. Beehive – Textbook in English for Class IX (Core Course) – NCERT
3. Interact in English – Literature Reader (Communicative) for Class IX – NCERT
4. English Grammar – Wren & Martin
5. http://www.myenglishgrammar.com/

Year & Semester: P1S2 (2018 Onwards)	Course Code: E121	Course Name: English	No. of Credits: 4	L-T -P: 2-2-0

Unit-I:
1.1: The Necklace – Guy De Maupassant

Unit-II:
2.1: Footprints Without Feet – H. G. Wells

Unit-III:
3.1: Nelson Mandela Long Walk to Freedom – Nelson Rolihlahla Mandela

Unit-IV:
4.1: Madam Rides the Bus – Vallikkannan
4.2: The Making of a Scientist – Robert W. Peterson

Unit-V:
5.1: From the Diary of Anne Frank – Anne Frank
5.2: The Thief's Story – Ruskin Bond

Unit-VI:
6.1: Glimpses of India:
Part I: A Baker From Goa – Lucio Rodrigues
Part II: Coorg – Lokesh Abrol

References:
1. First Flight – Textbook in English for Class X (Core Course) – NCERT
2. Footprints Without Feet – Supplementary Reader in English for Class X (Core Course) – NCERT
3. English Grammar – Wren & Martin
4. http://www.myenglishgrammar.com/

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S1 (2017 Onwards)	E211	English	4	2-2-0

Unit-I:
1.1: The Luncheon – William Somerset Maugham

Unit-II:
2.1: Mother's Day (One-act Play) – J. B. Priestley

Unit-III:
3.1: The Summer of the Beautiful White Horse – William Saroyan
3.2: The Browning Version – Terence Rattigan

Unit-IV:
4.1: The Portrait of a Lady – Khushwant Singh
4.2: The Ailing Planet: Role of Green Movement – Nani Palkhivala

Unit-V:
5.1: The Adventure – Jayant Narlikar

Unit-VI:
6.1: Pappachi's Moth – Arundhati Roy
6.2: We're not Afraid to Die. If We Can All Be Together – Gordon Cook and Alan East

References:
1. Hornbill – Textbook in English for Class XI (Core Course) – NCERT
2. Snapshots – Supplementary Reader in English for Class XI (Core Course) – NCERT

3. Woven Words – Textbook in English for Class XI (Elective Course) – NCERT
4. English Grammar – Wren & Martin
5. http://www.myenglishgrammar.com/

Year & Semester: P2S2 (2017 Onwards)	Course Code: E221	Course Name: English	No. of Credits: 4	L-T-P: 2-2-0

Unit-I:
1.1: The Rattrap – Selma Lagerlof

Unit-II:
2.1: Eveline – James Joyce

Unit-III:
3.1: The Tiger King – Kalki

Unit-IV:
4.1: Argumentative Indian – Amartya Sen
4.2: On The Face of It – Susan Hill

Unit-V:
5.1: Lost Spring – Anees Jung
5.2: Respond Instead of Reacting – Azim Premji

Unit-VI:
6.1: Journey to the End of the Earth – Tishani Doshi

References:
1. Inter NET 2 – Intermediate Course 2nd Year English Text book
2. Flamingo – A Text Book in English for Class XII (Core Course) – NCERT
3. Vistas – Supplementary Reader in English for Class XII (Core Course) – NCERT
4. Kaleidoscope – A Text Book in English for Class XII (Elective) – NCERT
5. English Grammar – Wren & Martin
6. http://www.myenglishgrammar.com

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Minutes of 3rd Internal BOS Meeting-Mathematics

The internal BOS committee for Mathematics has met on **16th December 2017** at IIIT-R.K.Valley and the following recommendations & resolutions have been made.

1. Suggested to change the Course names as IA, IB for first year and II A, II B for Second year PUC Courses.
2. P1S1: Suggested to add Cartesian Coordinate, Locus, Transformation of axes and Rotation of axes as Prerequisites in Unit-IV and recommended to modify the module introduction to functions and functions as one module.
3. P2S1: Suggested to add the modules Areas using integrals in Unit-III along with Area between Curves in Unit-IV and recommended to delete the modules Quadratic Eqn's and Graphs of Quadratic Eqns in Unit-IV which will give Confusion to the Students in PUC level.
4. P2S2: Suggested to change the modules names in Unit-I: Exponential numbers as introduction to Exponential Series and Unit IV: Addition Rules, Multiplicative Rules and
5. Bayes Rule as Addition Theorem, Multiplicative Theorem and Bayes Theorem respectively.

Sl. No.	Name of the Internal BOS Member	As	Designation	Signature
1	Dr. B. Konda Reddy	Chairman	Dean Academics IIIT- R.K.Valley	P.N.L. Kishte 16/12/17
2	Prof. G. Shankara Sekhara Raju	External Member	Professor, Dept. of Mathematics JNTU, Pulivendla	
3	Prof. D. Bharathi	External Member	Professor, Dept. of Mathematics S.V. University, Tirupati	
4	Mr. R. Madan Kumar	Internal Member	Mentor Dept. of Mathematics IIIT- R.K.Valley	
5	Dr. J. Deepthi	Internal Member	Mentor Dept. of Mathematics IIIT-R.K.Valley, Kadapa	J. Deepthi
6	Mr. A. Sudhir Kumar	Convener	HOD, Lecturer Dept. of Mathematics IIIT- R.K.Valley	A. Sudhir Kumar

DEPARTMENT OF MATHEMATICS

Syllabus:

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S1	M112	Mathematics	4	2-2-0

UNIT-I: SETS
Set Concept, Set Operations, Algebra of Sets, and Cartesian product of Sets.

UNIT-II: LINEAR INEQUATIONS
Real line, Linear In-equations in one variable, In-equations involving Absolute values, System of linear In-equations.

UNIT-III: RELATIONS AND FUNCTIONS
Relations, Introduction to functions, Types of functions, Inverse functions, Graphs of functions, Exponential function, Logarithmic function, Exponential equation.

UNIT-IV: TRIGONOMETRIC FUNCTIONS
Angles and coordinate Lines, Trigonometric functions of acute angles, Trigonometric functions of General angles, Graphs of Trigonometric functions, Reductions to Functions of positive acute angles, Trigonometric functions of two angles, Trigonometric functions of multiple angles, Trigonometric functions of Sub-Multiple angles, Inverse Trigonometric functions, Transformation Formulas, Conditional Trigonometric Identities, Trigonometric Equations, Relation between the Angles and Sides of a triangle.

Unit-V: COMPLEX NUMBERS
Concept of Complex Numbers, Algebra of Complex Numbers, Complex Plane, Polar Form

UNIT-VI: STRAIGHT LINES
Cartesian Co-ordinates, Locus, Transformation of axes and Rotation of axes, Slope of a line, Various forms of equation of a line, Parallel and perpendicular lines, General equation of a line, Distance of a point from a line, Family of lines.

References:
1. KHAN ACADEMY WEBSITE
2. TELUGU ACADEMI and NCERT First and Second year Textbooks (IA, IB, IIA, IIB)
3. THOMAS' CALCULUS OF EARLY TRANSCENDENTALS 12th Edition, George B.Thomas Jr., Maurice D. Weir, Joel Hass

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T -P:
P1S2	M122	Mathematics	4	2-2-0

UNIT-I: SEQUENCES AND SERIES
Sequences and series, Arithmetic progression, Geometric progression, Harmonic progression

UNIT-II: PRINCIPLE OF MATHEMATICAL INDUCTION

Sums of Natural Numbers, Principle of Mathematical Induction

UNIT-III: BINOMIAL THEOREM
Binomial Theorem for Positive Integral Indices, General and Middle Terms, Greatest Coefficient, Binomial Coefficients, Multinomial Coefficients

UNIT-IV: TRIGONOMETRY
Properties of Triangles, De Moivre's Theorem

UNIT-V: LIMITS AND CONTINUITY
Rates of change, Concept of a limit, Rules for finding limit, Extension of the limit concept, Infinite limits, Limits at infinity, Continuity at a point, Rules of continuity, Continuity on intervals, Tangent lines.

UNIT-VI: DIFFERENTIATION
The derivative of a function, Derivatives and continuity, Differentiation rules – Sums and Differences, Differentiation rules – Products and Quotients, Second and higher order derivatives, Some special limits, Derivatives of trigonometric functions, Continuity of trigonometric functions, The chain rule, Differentiation formulas that include the chain rule, Implicit differentiation, Tangent and normal lines, Rational powers of differentiable functions, Related rates of change.

References:
1. KHAN ACADEMY WEBSITE
2. TELUGU ACADEMI and NCERT First and Second year Textbooks (IA, IB, IIA, IIB)
3. THOMAS' CALCULUS OF EARLY TRANSCENDENTALS 12th Edition, George B. Thomas Jr., Maurice D. Weir, Joel Hass

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S1	M212	Mathematics	4	2-2-0

UNIT-I: APPLICATIONS OF DERIVATIVES
Extreme values of functions, Finding extreme values, Rolle's Theorem, Mean value theorems, Increasing and Decreasing functions, The First derivative test, Curve Sketching, The second Derivative Test, Strategy for Graphing, Asymptotes, Graphing with Asymptotes and Dominant Terms, Optimization.

UNIT-II: INDEFINITE INTEGRALS
Indefinite integrals, Integration by substitution, Approximation by Finite Sums, Average Value of a Non-negative Function, Algebra of Finite Sums, Limit of Riemann Sums.

UNIT-III: DEFINITE INTEGRALS
Definite Integrals, Properties of Definite Integrals, Mean Value Theorem for Integrals, The Fundamental Theorem, Evaluation of Definite Integrals, Substitution in Definite Integrals.

UNIT-IV: APPLICATIONS OF INTEGRATION
Area using Integrals, Area between Curves, Volumes of Solids by Slicing, Volumes of Solids

of Revolution – Disks, Volumes of Solids of Revolution – Washers, Volumes of Solids of Revolution– Shell Method, Length of Curves, Area of Surfaces of Revolution.

UNIT-V: PERMUTATIONS AND COMBINATIONS
Fundamental Principle of Counting Distributions, Permutations, Permutations with Repetitions, Ordered Samples, Combinations.

UNIT-VI: CONIC SECTIONS
Circle, Parabola, Ellipse, Hyperbola, Classifying Conic Sections by Eccentricity.

References:
1. KHAN ACADEMY WEBSITE
2. TELUGU ACADEMI and NCERT First and Second year Textbooks (IA, IB, IIA, IIB)
3. THOMAS' CALCULUS OF EARLY TRANSCENDENTALS 12th Edition, George B. Thomas Jr., Maurice D. Weir, Joel Hass

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S2	M222	Mathematics	4	2-2-0

UNIT-I: INFINITE SERIES
Binomial Series, Geometric Series, Arithmetic- Geometric Series, Introduction to Exponential series, Exponential Series, Logarithmic Series

UNIT-II: PARAMETERIZATION
Plane Curves, Parameterization of Plane Curves, Differentiation with Parameterized Curves, Integration with Parameterized Curves.

UNIT-III: TRANSCEDENTAL FUNCTIONS
Inverse Functions, Derivative of Inverse Functions, Natural Logarithms, Logarithmic Differentiation, Exponential Function, General Exponential Function, General Logarithmic Functions, L'Hopital's Rule, Relative Rates of Growth, Inverse Trigonometric Functions, Derivatives of Inverse Trigonometric Functions, Integration Formulas, Hyperbolic Functions, Inverse Hyperbolic Functions.

UNIT-IV: POLAR COORDINATES
Polar Coordinates, Graphing in Polar Coordinates, Polar Equations for Lines and Circles, Polar Equations for Conic Sections, Area in Polar Coordinates, Length and Surface Area in Polar Coordinates

UNIT-V: VECTOR ALGEBRA
Vectors in Plane, Components of Vector, Slopes, Tangents and Normals, Vectors in Space(3-D Coordinate System), Vectors in Space, Unit vectors, Distance, and Midpoints, Dot Product, Vector Projections, Cross Product, Calculation of Cross products.

UNIT-VI: PROBABILITY

Sample Space and Events, Probability of an Event, Addition Theorem, Conditional Probability, Multiplication Theorem, Bayes' Theorem.

References:

1. KHAN ACADEMY WEBSITE
2. TELUGU ACADEMI and NCERT First and Second year Textbooks (IA, IB, IIA, IIB)
3. THOMAS' CALCULUS OF EARLY TRANSCENDENTALS 12th Edition, George B. Thomas, Jr, Maurice D. Weir, Joel Hass

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Minutes of 3rd Internal BOS Meeting-Physics

The internal BOS committee for Physics has met on 14th December 2017 at IIIT-R.K.Valley and the following recommendations & resolutions have been made.

1. Add units and Dimensions in unit-I of P1S1, Add linear equations of motion in unit-III of P1S1.
2. Addition of Introduction to relative motion in unit--III of P1S2.
3. In P2S1, unit-VI to be rearranged as Heat (unit-V) and Thermodynamics as unit-VI and some of the content to be added.
4. P2S2, unit-V is to be replaced by unit-VI, New unit-VI is Introduced as Semiconductors and Basic Electronics.
5. Newton's Ring Experiment to be added in P2.

Sl. No.	Name of the Internal BOS Member	As	Designation	Signature
1	Dr. B. Konda Reddy/ ~~Dr. P. Naga Ratna Kishore~~	Chairman	Dean Academics IIIT- R.K.Valley	P.V.R. Kishore
2	Dr. Bal Govind Tiwari	Convener	Lecturer Dept. of Physics IIIT- R.K.Valley	14/XII/17
3	Prof. K.T.Ramakrishna Reddy	External Member	Professor, Dept. of Physics, S.V. University, Tirupati	
4	Prof. K. Krishna Reddy	External Member	Professor Dept. of Physics, Y. V. University, Kadapa	
5	Mr. P. Veera Raghava Reddy	Internal Member	Mentor, Dept. of Physics, IIIT- R.K.Valley	
6	Dr. P. Tirupathi	Internal Member	Lecturer, Dept. of Physics, IIIT- R.K.Valley	

DEPARTMENT OF PHYSICS

Syllabus:

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S1	P113	Physics	4	2-2-1

UNIT-1: ONE-DIMENSIONAL MOTION

Introduction to Physics - What is physics, Units and Dimensions, Applications of Dimensional Method of Analysis, **Displacement, Velocity, and Time**- What is displacement, What is velocity, Introduction to vectors & scalars, Introduction to reference frames (Relative velocity), Calculating average velocity or speed, Solving for time, Displacement from time and velocity example, Instantaneous speed and velocity, What are position vs. time graphs, Position vs. time graphs. **Acceleration**-What is acceleration, Airbus A380 take-off time, Airbus A380 take-off distance, What are velocity vs. time graphs, Why distance is area under velocity-time line, What are acceleration vs. time graphs, Acceleration vs. time graphs.

UNIT-2: KINEMATICS

Kinematic formulas and projectile motion- What are the kinematic formulas, Linear equations of motion, Average velocity for constant acceleration, Acceleration of aircraft carrier take-off, Airbus A380 take-off distance, Deriving displacement as a function of time, acceleration, and initial velocity, Plotting projectile displacement, acceleration, and velocity, Projectile height given time, Deriving max projectile displacement given time, Impact velocity from given height, Viewing g as the value of Earth's gravitational field near the surface, Choosing kinematic equations. **Old videos on projectile motion**-Projectile motion (part 1), Projectile motion (part 2), Projectile motion (part 3), Projectile motion (part 4), and Projectile motion (part 5)

UNIT-3: TWO-DIMENSIONAL MOTION

Two-dimensional projectile motion- What is 2D projectile motion, Horizontally launched projectile, Visualizing vectors in 2 dimensions, Projectile at an angle, Launching and landing on different elevations, Total displacement for projectile, Total final velocity for projectile, Correction to total final velocity for projectile, Projectile on an incline, What are velocity components, Unit vectors and engineering notation, Unit vector notation, Unit vector notation (part 2), Projectile motion with ordered set notation. Projectile motion with ordered set notation, optimal angle for a projectile part 1,2,3,4

UNIT-4: FORCES AND NEWTON'S LAWS OF MOTION

Newton's laws of motion- What is Newton's first law, What is Newton's second law, What is Newton's third law, Newton's first law of motion, Newton's first law of motion concepts, More on Newton's first law of motion, Newton's second law of motion, More on Newton's second law, Newton's third law of motion, More on Newton's third law. **Normal force and contact force**- What is weight, What is normal force, Normal force and contact force, Normal force in an elevator, More on Normal force (shoe on floor), More on Normal force (shoe on wall). **Balanced and unbalanced forces**- Balanced and unbalanced forces, Unbalanced forces and motion. **Slow sock on Lubricon VI**- Slow sock on Lubricon VI, Normal forces on Lubricon VI. **Tension**- The force of tension, Mild and medium tension,

Super hot tension, What is tension, Introduction to tension, Introduction to tension (part 2), Tension in an accelerating system and pie in the face. **Treating systems**- Treating systems

(the hard way), Treating systems (the easy way), Two masses hanging from a pulley, Three box system problem, Masses on incline system problem.

UNIT-5: WORK AND ENERGY

Work and energy- Introduction to work and energy, What are energy and work, What is kinetic energy, What is gravitational potential energy, What is conservation of energy, Work and energy (part 2), Conservation of energy, Work and the work-energy principle, Work as the transfer of energy, Work example problems, Work as area under curve, Thermal energy from friction, What is thermal energy, Work/energy problem with friction, Conservative forces, What is power, Power. **Mechanical advantage**- Introduction to mechanical advantage, Mechanical advantage (part 2), Mechanical advantage (part 3)

UNIT-6: IMPACTS AND LINEAR MOMENTUM

Momentum and Impulse- Introduction to momentum, what are momentum and impulse, what is conservation of momentum, Impulse and momentum dodge ball example, Bouncing fruit collision example, Momentum: Ice skater throws a ball, 2-dimensional momentum problem, 2-dimensional momentum problem (part 2), Force vs. time graphs. **Elastic and inelastic collisions**- Elastic and inelastic collisions, What are elastic and inelastic collisions, Solving elastic collision problems the hard way, Deriving the shortcut to solve elastic collision problems, How to use the shortcut for solving elastic collisions, What are two dimensional collisions. **Center of mass**- What is center of mass, Center of mass, Equation for center of mass.

Practicals:

1) Vernier calipers,
2) Screw gauge,
3) Spherometer,
4) Simple pendulum

References:

1) www.khanacademy.org
2) www.wikipedia.com
3) University Physics with Modern Physics (Hugh D. Young, Roger A. Freedman and A. Lewis Ford)
4) Fundamentals of Physics by H. C. Verma.
5) Principles of Physics by Halliday , Resnick and Walker

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S2	P123	Physics	4	2-2-1

UNIT-1: FRICTION

Inclined planes and friction- What is friction, What are inclines, Inclined plane force components, Ice accelerating down an incline, Force of friction keeping the block stationary, Correction to force of friction keeping the block stationary, Force of friction keeping velocity

constant, Intuition on static and kinetic friction comparisons, Static and kinetic friction example.

UNIT-2: CENTRIPETAL FORCE AND GRAVITATION

Circular motion and centripetal acceleration- What is centripetal acceleration, Race cars with constant speed around curve, Centripetal force and acceleration intuition, Visual understanding of centripetal acceleration formula, Optimal turns at Indianapolis Motor Speedway with JR Hildebrand, Calculus proof of centripetal acceleration formula, Loop de loop question, Loop de loop answer part 1, Loop de loop answer part 2. **Centripetal forces**- What is a centripetal force, Centripetal force problem solving, Yo-yo in vertical circle example, Bowling ball in vertical loop, Mass swinging in a horizontal circle. Introduction to relative motion **Newton's law of gravitation**- Introduction to gravity, Mass and weight clarification, Gravity for astronauts in orbit, Would a brick or feather fall faster, Acceleration due to gravity at the space station, Space station speed in orbit, Introduction to Newton's law of gravitation, Gravitation (part 2).

UNIT-3: TORQUE AND ANGULAR MOMENTUM

Rotational kinematics- Angular motion variables, relating angular and regular motion variables, Relationship between angular velocity and speed, Rotational kinematic formulas **Torque, moments and angular momentum**- Introduction to torque, Moments, Moments (part 2), Finding torque for angled forces, Rotational version of Newton's second law, More on moment of inertia, Rotational inertia, Rotational kinetic energy, Rolling without slipping problems, Angular momentum, Constant angular momentum when no net torque, Angular momentum of an extended object, Ball hits rod angular momentum example, Cross product and torque.

UNIT-4: ELASTICITY

Springs and Hooke's law- What is Hooke's Law, Intro to springs and Hooke's law, What is elastic potential energy, Potential energy stored in a spring, , LOL diagrams, Vertical springs and energy conservation.

UNIT-5: OSCILLATIONS AND MECHANICAL WAVES

Simple harmonic motion- Intuition about simple harmonic oscillators, Definition of Amplitude and Period, Equation for simple harmonic oscillators, Period dependence for mass on spring, Phase constant, Pendulums. **Simple harmonic motion (with calculus)** - Introduction to harmonic motion, Harmonic motion part 2 (calculus), Harmonic motion part 3 (no calculus). **Introduction to mechanical waves**- Introduction to waves, Properties of periodic waves, the equation of a wave

UNIT-6: SOUND

Sound- Production of sound, Sound Properties (Amplitude, Period, Frequency, Wavelength), Speed of Sound, Relative speed of sound in solids, liquids, and gases, Mach numbers, Decibel Scale, Why do sounds get softer, Ultrasound medical imaging. **The Doppler effect**- Doppler Effect introduction, Doppler Effect formula for observed frequency, Doppler Effect formula when source is moving away, when the source and the wave move at the same velocity, Doppler Effect for a moving observer, Doppler Effect: reflection off a moving object. **Wave interference**- Wave interference, Constructive and Destructive interference,

Standing waves on strings, Standing waves in open tubes, Standing waves in closed tubes, Beat frequency, Derivation of beat frequency formula.

Practicals:

1. Boyle's law
2. Velocity of sound by resonance apparatus
3. Surface tension
4. Inclined Plane

References:

1) www.khanacademy.org
2) www.wikipedia.com
3) University Physics with Modern Physics (Hugh D. Young, Roger A. Freedman and A. Lewis Ford)
4) Fundamentals of Physics by H. C. Verma.
5) Principles of Physics by Halliday , Resnick and Walker

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S1	P213	Physics	4	2-2-1

UNIT-1: FLUIDS

Density and Pressure- What is pressure, Specific gravity, Pressure and Pascal's principle (part 1), Pressure and Pascal's principle (part 2), Pressure at a depth in a fluid, Finding height of fluid in a barometer. **Buoyant Force and Archimedes' Principle**- What is buoyant force, Archimedes principle and buoyant force, Buoyant force example problems.

UNIT-2: FLUID DYNAMICS

Fluid Dynamics- What is volume flow rate, Volume flow rate and equation of continuity, What is Bernoulli's equation, Bernoulli's equation (part 1), Bernoulli's equation (part 2), Bernoulli's equation (part 3), Bernoulli's equation (part 4), Bernoulli's example problem, , Viscosity and Poiseuille flow, Turbulence at high velocities and Reynold's number, Venturi effect and Pitot tubes, Surface Tension and Adhesion.

UNIT-3: ELECTROMAGNETIC WAVES AND INTERFERENCE

Introduction to electromagnetic waves- Light: Electromagnetic waves, the electromagnetic spectrum and photons, Electromagnetic waves and the electromagnetic spectrum, Polarization of light, linear and circular. **Interference of electromagnetic waves**- Constructive and Destructive interference, Young's double slit introduction, Young's double slit equation, Young's double slit problem solving, Diffraction grating, Single slit interference, more on single slit interference, Thin Film Interference part 1, Thin Film Interference part 2.

UNIT-4: GEOMETRIC OPTICS

Reflection and refraction- Specular and diffuse reflection, Specular and diffuse reflection 2, Refraction and Snell's law, Refraction in water, Snell's law example 1, Snell's law example 2, Total internal reflection, Dispersion. **Mirrors**- Virtual image, Parabolic mirrors and real images, Parabolic mirrors 2, Convex parabolic mirrors, Derivation of the mirror equation, Mirror equation example problems. **Lenses**- Convex lenses, Convex lens examples, Concave

lenses, Object image and focal distance relationship (proof of formula), Object image height and distance relationship, Thin lens equation and problem solving, Multiple lens systems, Diopters, Aberration, and the Human Eye.

UNIT-5: HEAT

Temperature, kinetic theory, and the ideal gas law- Thermodynamics part 1: Molecular theory of gases, Thermodynamics part 2: What is the ideal gas law, Ideal gas law, Thermodynamics part 3: Kelvin scale and Ideal gas law example, Thermodynamics part 4: Moles and the ideal gas law, Thermodynamics part 5: Molar ideal gas law problem, What is the Maxwell-Boltzmann distribution, Maxwell Boltzmann distribution. **Specific heat and heat transfer**- Specific heat and latent heat of fusion and vaporization, What is thermal conductivity, Thermal conduction, convection, and radiation, Thermal conduction, Thermal conductivity of metal and wood, Intuition behind formula for thermal conductivity.

UNIT-6: THERMODYNAMICS

Laws of thermodynamics- Macrostates and microstates, Quasistatic and reversible processes, What is the first law of thermodynamics, First law of thermodynamics / internal energy, More on internal energy, Work from expansion, What are PV diagrams, PV-diagrams and expansion work, Proof: U = (3/2)PV or U = (3/2)nRT, Work done by isothermic process, Carnot cycle and Carnot engine, Proof: Volume ratios in a Carnot cycle, Proof: S (or entropy) is a valid state variable, Thermodynamic entropy definition clarification, Reconciling thermodynamic and state definitions of entropy, Entropy intuition, Maxwell's demon, More on entropy, Efficiency of a Carnot engine, Carnot efficiency 2: Reversing the cycle, Carnot efficiency 3: Proving that it is the most efficient.

Practicals:

1) Focal length of Convex lens,
2) Focal length of concave mirror,
3) Sonometer,
4) Refractive index of glass slab,
5) Minimum Deviation angle of prism,

References:

1) www.khanacademy.org
2) www.wikipedia.com
3) University Physics with Modern Physics (Hugh D. Young, Roger A. Freedman and A. Lewis Ford)
4) Fundamentals of Physics by H. C. Verma.
5) Principles of Physics by Halliday , Resnick and Walker

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S2	P223	Physics	4	2-2-1

UNIT-1: ELECTRIC CHARGE, FIELD AND POTENTIAL

Charge and electric force (Coulomb's law) - Triboelectric effect and charge, Coulomb's Law, Conductors and Insulators, Conservation of Charge. **Electric field**- Electric field definition, Electric field direction, Magnitude of electric field created by a charge, Net

electric field from multiple charges in 1D, Net electric field from multiple charges in 2D, Electric field, Proof: Field from infinite plate (part 1), Proof: Field from infinite plate (part 2).

Electric potential energy, electric potential, and voltage- Electric potential energy, Electric potential energy (part 2- involves calculus), Voltage, Electric potential energy of charges, Electric potential at a point in space, Electric potential charge configuration.

UNIT-2: CIRCUITS

Ohm's law and circuits with resistors- Basic electrical quantities: current, voltage, power, Introduction to circuits and Ohm's law, Resistors in series, Resistors in parallel, Example: Analyzing a more complex resistor circuit, Analyzing a resistor circuit with two batteries, Resistivity and conductivity, Kirchhoff's laws, Kirchhoff's current law, Kirchhoff's voltage law, Electric power, Voltmeters and Ammeters, Electrolytic conductivity. **Circuits with capacitors** - Capacitors and capacitance, Capacitance, Energy of a capacitor, Capacitors in series, Capacitors in parallel, Dielectrics in capacitor.

UNIT-3: MAGNETIC FORCES,

Magnets and Magnetic Force- Introduction to magnetism, What is magnetic force, Magnetic force on a charge, Cross product 1, Cross product 2, Magnetic force on a proton example (part 1), Magnetic force on a proton example (part 2), Magnetic force on a current carrying wire.

UNIT-4: MAGNETIC FIELDS AND FARADAY'S LAW

Magnetic field created by a current- What are magnetic fields, Magnetic field created by a current carrying wire, Magnetic force between two currents going in the same direction, Magnetic force between two currents going in opposite directions, Induced current in a wire. **Electric motors**- Electric motors (part 1), Electric motors (part 2), Electric motors (part 3), The dot product, Dot vs. cross product, Calculating dot and cross products with unit vector notation. **Magnetic flux and Faraday's law**- What is magnetic flux, Flux and magnetic flux, Faraday's Law Introduction, Lenz's Law, What is Faraday's law, Faraday's Law example, Emf induced in rod traveling through magnetic field, Faraday's Law for generating electricity.
Einstein velocity addition formula derivation, Applying Einstein velocity addition, finding an in-between frame of reference, Calculating neutral velocity, Time dilation

UNIT-5: QUANTUM PHYSICS

Photons- Photon Energy, Photon Momentum, Photoelectric effect, Photoelectric effect. **Atoms and electrons**- De Broglie wavelength, Quantum Wave function, Atomic Energy Levels, Bohr model radii (derivation using physics), Bohr model radii, Bohr model energy levels (derivation using physics), Bohr model energy levels, Absorption and emission, Emission spectrum of hydrogen, Bohr's model of hydrogen. **Quantum numbers and Orbitals** - The quantum mechanical model of the atom, Heisenberg uncertainty principle, Quantum numbers, Quantum numbers for the first four shells. **Nuclei**- Mass defect and binding energy, Nuclear stability and nuclear equations, Types of decay, Writing nuclear equations for alpha, beta, and gamma decay, Half-life and carbon dating, Half-life plot, Exponential decay formula proof (can skip, involves calculus), Introduction to exponential decay, More exponential decay examples, Exponential decay and semi-log plots.

UNIT-6: INTRODUCTION TO SEMICONDUCTOR S AND BASIC ELECTRONICS

Intrinsic and Extrinsic semiconductors- Intrinsic semiconductors, extrinsic semiconductors, n-type and p-type semiconductors **Junction Diode-** p-n junction diode, forward bias, reverse bias, voltage-current (V-I) characteristics, junction diode as rectifier, half wave rectifier and full wave rectifier, Zener diode, Zener diode as voltage regulator. **Transistors-**p-n-p transistor, n-p-n transistor, transistor configurations, transistor characteristics, transistor as amplifier **Logic Gates-** AND gate, OR gate, NOT gate, NOR gate, NAND gate.

Practicals:

1. Magnetic lines of force,
2. Verification of Ohm's Law,
3. Meter bridge,
4. P-N Junction Diode.
5. Newton's Rings

References:

1. www.khanacademy.org
2. www.wikipedia.com
3. University Physics with Modern Physics (Hugh D. Young, Roger A. Freedman and A. Lewis Ford)
4. Fundamentals of Physics by H. C. Verma.
5. Principles of Physics by Halliday , Resnick and Walker

Rajiv Gandhi University of Knowledge Technologies
(A.P. Government Act 18 of 2008)
IIIT RK Valley, Vempalli (M), YSR Kadapa (Dist.) Andhra Pradesh-516330

Minutes of 3rd Internal BOS Meeting – Chemistry (Departmental Academic Committee (DAC))

The internal BOS committee (DAC) for Chemistry has met on 16th December 2017 at IIIT RK Valley and the following recommendations & resolutions have been made.

1. It is unanimously resolved to adopt the syllabus of Chemistry for P1S1 and to implement the same w.e.f the academic year 2017-18 (R17 batch onwards).

2. It is suggested to incorporate a unit 'Solutions' in P1S2 for better understanding of the practicals.

3. It is suggested to rearrange the modules within the units of P2S1 (units III, IV and V), and In P2S2 (units IV and V) syllabus.

4. With the above suggestions & minor modifications, the syllabi of Chemistry for P1S2, P2S1, and P2S2 has been approved and resolved to implement the same w.e.f the academic year 2017-18 (R17 batch onwards).

Sl. No.	Name of the internal BOS member	As	Designation	Signature
1	Dr. B. Konda Reddy	Chairman	Dean Academics, IIIT RK Valley	P.V.R.Kishore
2	Prof. A. G. Damu	External Expert	Professor, Dept. of Chemistry, Y. V. University, Kadapa	16/12/17
3	Prof. G. V. Subba Reddy	External Expert	Professor, Dept. of Chemistry, JNTU, Pulivendula	16/12/17
4	Mr. H. Seshagiri Rao	Internal Expert	Lecturer, Dept. of Chemistry, IIIT RK Valley	H. Seshagiri Rao
5	Mr. P. Nagaraja	Internal Expert	Lecturer, Dept. of Chemistry, IIIT RK Valley	P. Nagaraja
6	Mr. B. Ramu	Convener	Mentor, Dept. of Chemistry, IIIT RK Valley	B. Ramu

DEPARTMENT OF CHEMISTRY

Syllabus:

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S1	C114	Chemistry	4	2-2-1

Unit-I: Atoms, compounds and Ions
Introduction to Chemistry, Elements and atoms, Atomic weight and atomic mass, Atomic weight calculation, The mole and Avogadro number, atomic number, mass number and isotopes, Introduction to ions, naming ions and ionic compounds, Molecules and compounds, Empirical, molecular and structural formulas, Molecular mass and molecular weights, Mass Spectrometry.

Unit-II: Chemical reactions and Stoichiometry
Chemical reactions introduction, Balancing chemical equations, Reaction stoichiometry, Limiting reagent and percent yield, Concept of equivalent weight, Percentage composition, empirical formula and molecular formula from mass composition, Introduction to redox reactions, Oxidation number, balancing redox reactions – Oxidation number method and Half reaction method, Types of chemical reactions, precipitation reactions, double and single displacement reactions

Unit-III: Electronic structure of atoms
History of atomic structure, Dalton's atomic theory, Discovery of electrons and nucleus, Rutherford gold foil experiment, Light, Electromagnetic waves, the electromagnetic spectrum, Photons (quantum theory), Photoelectric effect, Bohr model of Hydrogen, Bohr radii and energy levels, Absorption and emission spectrum, spectrum of hydrogen, The quantum mechanical model of an atom, Heisenberg uncertainty principle, Schrodinger wave equation, Quantum numbers, Orbitals and electronic configuration.

Unit-IV: Periodic Table
The periodic table, classification of elements, Groups of the periodic table, Counting valence electrons of main group elements, Transition elements, Periodic properties and trends of Atomic and ionic radii, ionization energy, electron affinity, electronegativity, metallic and non-metallic nature

Unit-V: Chemical bonds
Types of chemical bonds-Ionic, covalent, dative and metallic bonds, Ionic bonds and coulomb's law, Electronegativity and bonding, drawing Lewis dot structures, formal charge and resonance, VSEPR theory, dipole moment, Valence bond theory, Hybridization and hybrid orbitals

Unit-VI: Gaseous state and kinetic molecular theory
Gas laws and ideal gas equation, Concept of partial pressure, Dalton's law of partial pressures, Maxwell Boltzmann distribution, Non-ideal gas behavior, Vander Waal equation.
States of matter and intermolecular forces States of matter, Specific heat, latent heat of fusion and vaporization-examples, Chilling water problems, Change of state, examples, vapor

pressure, Phase diagrams **Solutions:** Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties - relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties (only equations and not experiments), abnormal molecular mass, van't Hoff factor

Practicals:

1. Chemistry involved in the preparation of the following double salts
2. Inorganic compounds: potash alum, Mohr's salt and potassium ferric oxalate
3. Preparation of standard solutions – Oxalic acid and Potassium di chromate solutions

References:

1. Telugu academy intermediate text book of Chemistry
2. NCERT text book of chemistry (Part-I)
3. Chemistry- The central science, 14th edition by Theodore E. Brown, H. Eugene LeMay, Bruce E. Bursten, Catherine Murphy, Patrick Woodward, Matthew E. Stoltzfus
4. Chemistry and chemical reactivity, 9th edition by John C. Kotz and Paul M. Treichel
5. Introductory Chemistry- An active learning approach, 5th edition by Mark S. Cracolice and Edward J. peters

Year & Sem:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S2	C124	Chemistry	4	2-2-1

Unit-I: Chemical equilibrium

Reactions in equilibrium, The equilibrium constant (Kc) and its derivation, Types of equilibrium, calculating equilibrium constant Kp using partial pressures, Factors that affect chemical equilibrium, Le Chatiliers' principle: worked examples, Introduction to reaction quotient Qc, Comparing K and Q

Unit-II: Acids and bases

Arhenius acids and bases, Bronsted-Lowry acid base theory and Lewis theory Autoionization of water and Kw, Definition of pH, pH and pOH scale, pH and pOH of strong acids and bases, Acid strength, ion size and bond energy **Acid-base equilibria**- conjugate acid-base pairs, Relationship between Ka and Kb, pKa and pKb relationship, Ka and acid strength, Weak acid and base equilibrium, Acid-base properties of salts, pH of salt solutions

Unit-III: Buffers, Titrations, and solubility equilibria

Buffers : Introduction, Buffers and common ion effect, Henderson-Hasselbalch equation, Buffer solution pH calculations, pH and pKa relationships of buffers, Buffer capacity

Titrations- Introduction, Titration calculations, Titration of strong acid with strong base, Titration of weak acid with strong base, Titration of strong acid with weak base, problems, Titration curve and acid-base indicators, Acid-base titration example, Redox titration

Solubility equilibria- Dissolution and precipitation, Common polyatomic ions, Introduction to solubility and solubility product constant (Ksp), Common ion effect and its applications, Solubility and pH of the solution

Unit-IV: Thermodynamics

Internal energy- First law of thermodynamics introduction, Calculating internal energy and work example, Heat and temperature, Specific heat and latent heat of fusion and vaporization, Pressure-Volume work, Quasistatic and reversible process, Work from expansion Enthalpy- Calorimetry and enthalpy introduction , Heat of formation, Hess law and reaction enthalpy change, Hess law examples, bond enthalpy and enthalpy of reaction Entropy- Introduction, Second law of thermodynamics, Work done by isothermic process, Carnot cycle and Carnot engine, Gibbs free energy and spontaneity, Examples, Change in free energy and reaction quotient, Standard free energy change and equilibrium constant

Unit-V: Electrochemistry

Electrolytic cells and electrolysis – Introduction to electrolysis, quantitative electrolysis, electrolysis of molten sodium chloride Galvanic cells- Redox reaction from dissolving zinc in copper sulfate, Introduction to Galvanic/Voltaic cells, Electrode and voltage of galvanic cell, Shorthand notation for galvanic/Voltaic cells Standard cell potentials- Standard reduction potentials, Spontaneity and redox reactions, Free energy and cell potential, standard cell potential and the equilibrium constant, calculating equilibrium constant form standard cell potential Cell potential under nonstandard conditions- galvanic cells and changes in free energy, Nernst equation, Batteries: Types, Lead storage battery, Ni-Cd battery

Unit-VI: Chemical kinetics

Introduction to chemical kinetics, Rate of reaction, Rate law and reaction order, units of rate constant, Experimental determination of rate laws, Factors effecting reaction rate, Order and molecularity, First, second and zero order reactions, half-life, Methods of determination of order of a reaction, Collision theory, Arhenius equation, activation energy and transition state theory, problems, Catalysis.

Practicals:

Quantitative analysis

Acid-Bases titrations – HCl Vs NaOH
HCl Vs Na_2CO_3
H_2SO_4 Vs NaOH
H_2SO_4 Vs Na_2CO_3
Redox titrations- Oxalic acid Vs Potassium permanganate
Mohr's salt Vs Potassium permanganate

References:

1. Essential of physical chemistry, 6th edition by Peter Atkins and Julio De Paula
2. Essentials of physical chemistry by Arun Bahl, B. S. Bahl and G.D.Tuli
3. Principles of physical chemistry, B R Puri and L R Sharma
4. Telugu academy intermediate text book of Chemistry
5. NCERT text book of chemistry (Part-II)
6. Chemistry- The central science, 14th edition by Theodore E. Brown, H. Eugene LeMay, Bruce E. Bursten, Catherine Murphy, Patrick Woodward, Matthew E. Stoltzfus
7. Chemistry and chemical reactivity, 9th edition by John C. Kotz and Paul M. Treichel
8. Introductory Chemistry- An active learning approach, 5th edition by Mark S. Cracolice and Edward J. peters

Year & Sem:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S1	C214	Chemistry	4	2-2-1

Unit-I: Alkanes, Cycloalkanes and functional groups
Nomenclature of organic compounds, Isomerism in organic compounds, Types of Organic reactions, Reaction intermediates, Electronic displacements in covalent bond, Resonance, Introduction to Functional groups Alkanes and Cycloalkanes- Nomenclature, Preparation and properties of alkanes and cycloalkanes

Unit-II: Alkenes and Alkynes
Naming alkenes, Cis- trans and E-Z configuration, preparation and properties of alkenes, Markovnikov's and anti-Markovnikov's rule Alkynes – Naming of alkynes, preparation and properties of alkynes

Unit-III: Aromatic compounds
Introduction, Naming benzene derivatives, Aromatic stability **Reactions of benzene:** Electrophilic aromatic substitution-Mechanism, Halogenation, Nitration, Sulfonation, Friedal-Craft alkylation and acylation, Directing effects-Ortho, para and meta directors.
Other reactions and synthesis- Reactions at benzylic position, Synthesis of substituted benzene ring, Nucleophilic aromatic substitution.

Unit-IV: Stereochemistry
Molecular representations, Stereoisomers, enantiomers, and meso compounds, drawing enantiomers, Chirality, Cahn-Ingold-Prelog system for naming enantiomer (RS system) Optical activity, Optical activity calculations, Stereoisomeric relationships-Enantiomers, diastereomers and meso compounds

Unit-V: Substitution and elimination reactions
Alkyl halide nomenclature, preparation and properties SN1 and SN2: SN1 mechanism, Kinetics and Stereochemistry, Carbocation stability and rearrangement introduction, SN2 mechanism, Kinetics and Stereochemistry, SN1 and SN2 comparision E1 and E2 reactions: Mechanism, kinetics, regioselectivity, stereoselectivity and stereospecificity

Unit-VI: Alcohols, Phenols and Ethers
Introduction to Alcohols, Nomenclature, preparation and properties of alcohols and Phenols. Introduction, naming, preparation and properties of Ethers and cyclic ethers

Practicals:
Qualitative analysis of Inorganic salts
i. Cations: Pb^{+2}, Cu^{+2}, Al^{+3}, Fe^{+3}, Zn^{+2}, Ni^{+2}, Ca^{+2}, Ba^{+2}, Mg^{+2}, NH_4^{+}.
ii. Anions: CO_3^{-2}, S^{-2}, SO_4^{-2}, NO_3^{-}, Cl^{-}, Br^{-}, I^{-}.

References:
1. Organic chemistry, 3rd edition by Janice Gorzynski Smith
2. Organic chemistry by Jonathan Clayden and Nick Greeves
3. Organic chemistry, 6th edition by Robert N. Boyd and Robert T. Morrison
4. Organic chemistry, 7th edition by Paul Bruice

Year & Sem: P2S2	Course Code: C224	Course Name: Chemistry	No. of Credits: 4	L-T-P: 2-2-1

Unit-I: Aldehydes and Ketones Introduction, Nomenclature, Physical properties, Reactivity and Chemical properties of Aldehydes and Ketones Reactions at alpha carbon- Formation of enolate anion, Aldol condensation, Crossed- Aldol condensation, Cannizaro reactions

Unit-II: Carboxylic acids and their derivatives Introduction, Nomenclature, preparation and properties of carboxylic acids Carboxylic acid derivatives: Esters, Acid chlorides, amides and acid anhydrides- Preparation and properties

Unit-III: Amines Introduction, Naming of amines, basicity of amines, Preparation and properties of amines, Preparation and properties of Aniline

Unit-IV: Spectroscopy Infrared spectroscopy – Principle, Modes of vibrations, Signal characteristics-Wave number, IR spectrum, Identification of functional groups using IR UV spectroscopy – Principle, Beer-Lambert's law, electronic transitions, Chromophore and auxochromes, Conjugation and color

Unit-V: Proton NMR Introduction to proton NMR, Nuclear shielding, Chemical equivalence, Chemical shift, Electronegativity and Chemical shift, Diamagnetic anisotropy, integration, Spin-spin splitting, Multiplicity - (n+1) rule, Coupling constant

Unit-VI: Nuclear Chemistry Radioactive decay- Mass defect and binding energy, Nuclear stability and nuclear equations, types of decay, Writing nuclear equation for alpha, beta and gamma decay, Half life and carbon dating

Practicals:

Detection and confirmation of the following functional groups:

Hydroxyl, carbonyl, carboxylic, amino groups and carbohydrates

References:

1. Organic chemistry, 3rd edition by Janice Gorzynski Smith
2. Organic chemistry by Jonathan Clayden and Nick Greeves
3. Organic chemistry, 6th edition by Robert N. Boyd and Robert T. Morrison
4. Organic chemistry, 7th edition by Paul Bruice
5. Introduction to spectroscopy by Donald L.Pavia, Gary M.Lampman and George S. Kriz
6. Organic Spectroscopy by William Kemp
7. Organic spectroscopy: Principles and applications

Rajiv Gandhi University of Knowledge Technologies

(A.P GOVERNMENT ACT 18 OF 2008)

APIIIT, RK VALLEY (IDUPULAPAYA), VEMPALLI (M), KADAPA-516330

RK VALLEY
DATE: 03-05-2016

TO,
The Director,
RGUKT, RK Valley.

Dear sir,

Sub: Internal academic committee-reg.,

Internal academic committee held on 03-05-2016 at RGUKT, RK Valley campus for the department of Telugu.

The following internal academic committee members attended for the preparation of curriculum and syllabus that suits for cooperative education model. The syllabus required for RGUKT, RK valley students are verified thoroughly by the internal academic committee members.

S.No	Name of the member	Designation	Institute	Signature
1	Prof. K. Kusuma Reddy	Professor	Osmania University	K. Kusuma Reddy
2	Prof. E. Viswanatha Reddy	Professor	RGUKT, RK Valley	
3	Dr. M.N. Brahmanandaiah	Mentor	RGUKT, RK Valley	
4	Dr. D. Prabhavathi	Mentor	RGUKT, RK Valley	D. Prabhavathi
5	K. Ramu	Mentor	RGUKT, RK Valley	K. Ramu

List of enclosures:
1. Curriculum
2. Syllabus
3. Cooperative education model

Dean of Academics 3/5/16

3/5/16

3/5/16

03.05.16

Year & Semester: P1S1	Course Code: TE102	Course Name: TELUGU	No. of Credits: 2	L-T-P: 1-1-0

పద్యభాగం

అధ్యాయం-1

1 ధర్మ పద్ధతి (3 - మాడ్యుల్లు)

1.1. 1 నుండి 4 పద్యాలు

1.2. 5 నుండి 9 పద్యాలు

1.3. 10 నుండి 14 పద్యాలు

2. నీతి పద్ధతి (3 - మాడ్యుల్లు)

2.1. 1 నుండి 4 పద్యాలు

2.2. 5 నుండి 9 పద్యాలు

2.3. 10 నుండి 14 పద్యాలు

అధ్యాయం-2

3. వివేక పద్ధతి (4 - మాడ్యుల్లు)

3.1. 1 నుండి 4 పద్యాలు

3.2. 5 నుండి 8 పద్యాలు

3.3. 9 నుండి 12 పద్యాలు

3.4. 13 నుండి 16 పద్యాలు

4. కార్యసాధక పద్ధతి (1 - మాడ్యుల్లు)

4.1 1 నుండి 4 పద్యాలు

అధ్యాయం - 3

5. విద్వత్ పద్ధతి (2 – మాడ్యుల్లు)

5.1. 1 నుండి 3 పద్యాలు

5.2. 4 నుండి 6పద్యాలు

6. సజ్జన పద్ధతి (2 - మాడ్యుల్లు)

6.1. 1 నుండి 3 పద్యాలు

6.2. 4 నుండి 6 పద్యాలు

అధ్యాయం-4

7. స్వార్థ పద్ధతి (1 – మాడ్యుల్లు)

7.1. 1 నుండి 4 పద్యాలు

8. అర్థ పద్ధతి (2 – మాడ్యుల్లు)

8.1. నుండి 4 పద్యాలు

8.2. నుండి 6 పద్యాలు

అధ్యాయం-5

9. అధికార పద్ధతి (1 – మాడ్యుల్లు)

9.1. 1 నుండి 4 పద్యాలు

10. మూర్ఖ పద్ధతి (3 - మాడ్యుల్లు)

10.1. 1 నుండి 3 పద్యాలు

10.2. 4 నుండి 7 పద్యాలు

10.3. 8 నుండి 11 పద్యాలు

అధ్యాయం-6

11. దుర్జన పద్ధతి (7 - మాడ్యుల్లు)

11.1.1 నుండి 4 పద్యాలు

11.2.5 నుండి 8 పద్యాలు

11.3.9 నుండి 12 పద్యాలు

11.4.13 నుండి 16 పద్యాలు

11.5.17 నుండి 20 పద్యాలు

11.6.21 నుండి 24 పద్యాలు

11.7.25 నుండి 28 పద్యాలు

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S2	TE202	TELUGU	2	1-1-0

పద్యభాగం

అధ్యాయం - 1

12 లోక స్వభావ పద్ధతి (18 - మాడ్యుల్లు)

12.1 1 నుండి 4 పద్యాలు

12.2 5 నుండి 8 పద్యాలు

12.3 9 నుండి 12 పద్యాలు

12.4 13 నుండి 16 పద్యాలు

12.5 17 నుండి 20 పద్యాలు

అధ్యాయం - 2

12.6 21 నుండి 24 పద్యాలు

12.7 25 నుండి 28 పద్యాలు

12.8 29 నుండి 32 పద్యాలు

12.9 33 నుండి 36 పద్యాలు

12.10 37 నుండి 40 పద్యాలు

అధ్యాయం - 3

12.11 41 నుండి 44 పద్యాలు

12.12 45 నుండి 48 పద్యాలు

12.13 49 నుండి 52 పద్యాలు

12.14 53 నుండి 56 పద్యాలు

12.15 57 నుండి 60 పద్యాలు

అధ్యాయం - 4

12.16 61 నుండి 64 పద్యాలు

12.17 65 నుండి 67 పద్యాలు

12.18 68 నుండి 70 పద్యాలు

3 అహింసా పద్ధతి (1 - మాడ్యుల్లు)

13.1 1 నుండి 4 పద్యాలు

అధ్యాయం - 5

14 వేదాంత పద్ధతి (2 - మాడ్యుల్లు)

14.1 1 నుండి 5 పద్యాలు

14.2 6 నుండి 10 పద్యాలు

గద్య భాగం

1. సంపూర్ణ నీతిచంద్రిక (8 - మాడ్యుల్లు)

1.1 1 నుండి 4 సూక్తులు

1.2 5 నుండి 7 సూక్తులు

1.3 8 నుండి 10 సూక్తులు

అధ్యాయం - 6

1.4 11 నుండి 13 సూక్తులు

1.5 14 నుండి 17 సూక్తులు

1.6 18 నుండి 20 సూక్తులు

1.8 21 నుండి 23 సూక్తులు

1.9 24 నుండి 25 సూక్తులు

Year & Semester: P2S1	Course Code: TE302	Course Name: TELUGU	No. of Credits: 2	L-T-P: 1-1-0

పద్య భాగం

అధ్యాయం-1

1.యయాతి హితువు (7 మాడ్యూల్స్)

1.1 పరిచయం

1.2 1 నుండి 3పద్యాలు

1.3 4 నుండి 7పద్యాలు

1.4 8 నుండి 9పద్యాలు

1.5 10 నుండి 12పద్యాలు

1.6 13 నుండి 15పద్యాలు

1.7 16 నుండి 18పద్యాలు

అధ్యాయం-2

2.వ్యాఘ్ర గోమాయు సంవాదం (9 మాడ్యూల్స్)

2.1 పరిచయం

2.2 1నుండి 3పద్యాలు

2.3 4నుండి 7పద్యాలు

2.4 8నుండి 10పద్యాలు

2.5 11నుండి 13పద్యాలు

2.6 14నుండి 16పద్యాలు

2.7 17నుండి 20పద్యాలు

2.8 21నుండి 23పద్యాలు

2.9 24నుండి 27పద్యాలు

అధ్యాయం-3

3.దురాశ (8 మాడ్యూల్స్)

3.1 పరిచయం

3.2 1నుండి 3పద్యాలు

3.3 4నుండి 7పద్యాలు

3.4 8నుండి 10పద్యాలు

3.5 11నుండి 13పద్యాలు

3.6 14నుండి 16పద్యాలు

3.7 17నుండి 19పద్యాలు

3.8 20నుండి 22పద్యాలు

అధ్యాయం-4

4.కృషీవలుడు (8 మాడ్యూల్స్)

4.1 పరిచయం

4.2 1నుండి 3పద్యాలు

4.3 4నుండి 6పద్యాలు

4.4 7నుండి 9పద్యాలు

4.5 10నుండి 12పద్యాలు

4.6 13నుండి 15పద్యాలు

4.7 16నుండి 18పద్యాలు

4.8 19నుండి 20పద్యాలు

అధ్యాయం-5

5.జయభేరి (5 మాడ్యూల్స్)

5.1 పరిచయం

5.2 1నుండి 3కవితా ఖండికలు

5.3 4నుండి 7కవితా ఖండికలు

5.4 8నుండి 10కవితా ఖండికలు

5.5 11నుండి 13కవితా ఖండికలు

గద్యభాగం

6.కైలాసదూత ప్రహసనం **(2** మాడ్యూల్స్**)**

6.1 కైలాసదూత-పరిచయం

6.2 కైలాసదూత ప్రహసనం

7.చదువు **(4** మాడ్యూల్స్**)**

7.1 పరిచయం-వెంకటి దీనస్థితి

7.2 చదువు పై ఆసక్తి

7.3 దొరదొప్పం

7.4 చదువు కొరకు ప్రయత్నం

అధ్యాయం-6

ఛందస్సు

8.ఛందస్సు **(5** మాడ్యూల్స్**)**

8.1 పరిచయం-ఛందస్సు

8.2 గణాలు రకాలు

8.3 పద్య భేదాలు ఉత్పలమాల చంపకమాల

8.4 శార్దూలం మత్తేభం

8.5 ఉపజాతి పద్యాలు

అలంకారాలు

9.అలంకారాలు (2 మాడ్యూల్స్)

9.1 అలంకారాలు-పరిచయం ఉపమా, ఉత్ప్రేక్ష, రూపక అలంకారాలు

9.2 అతిశయోక్తి, స్వభావ, అర్థాంతరన్యాసఅలంకారాలు

Year & Semester: P2S2	Course Code: TE402	Course Name: TELUGU	No. of Credits: 2	L-T-P: 1-1-0

పద్యభాగం

అధ్యాయం -**1**

1. ప్రహ్లాదుని విద్య (**13** మాడ్యూల్స్)

1.1. పరిచయం - 1

1.2. పరిచయం - 2

1.3. 1 నుండి 6 పద్యాలు

1.4. 7 నుండి 10 పద్యాలు

1.5. 11 నుండి 16 పద్యాలు

1.6. 17 నుండి 20 పద్యాలు

1.7. 21 నుండి 24 పద్యాలు

1.8. 25 నుండి 28 పద్యాలు

1.9. 29 నుండి 32 పద్యాలు

1.10.33 నుండి 36 పద్యాలు

1.11.37 నుండి 40 పద్యాలు

1.12.41 నుండి 43 పద్యాలు

1.13.44 నుండి 45 పద్యాలు

అధ్యాయం -**2**

2. హనుమత్సందేశం (**10** మాడ్యూల్స్)

2.1. పరిచయం

2.2. 1 నుండి 3 పద్యాలు

2.3. 4 నుండి 4 7 పద్యాలు

2.4. 8 నుండి 10పద్యాలు

2.5. 11 నుండి 13 పద్యాలు

2.6. 14 నుండి 18 పద్యాలు

2.7. 19 నుండి22పద్యాలు

2.8. 23నుండి 25పద్యాలు

2.9. 26నుండి 28పద్యాలు

2.10. 29నుండి 31పద్యాలు

అధ్యాయం -**3**

3. కిన్నెరసాని పాటలు (10 మాడ్యూల్స్)

3.1. పరిచయం

3.2 1 నుండి 3గేయాలు

3.3 4నుండి 5గేయాలు

3.4 6నుండి 10గేయాలు

3.5 11 నుండి 15గేయాలు

3.6 16నుండి 20గేయాలు

3.7 21 నుండి 26గేయాలు

3.8 27నుండి 30గేయాలు

3.9 31నుండి 34గేయాలు

3.10 35నుండి 39గేయాలు

3.11 40నుండి 43గేయాలు

అధ్యాయం -**4**

3. అనువాదం (4 -మాడ్యూల్స్)

4.1. పరిచయం

4.2. ప్రయోజనం

4.3 దోషాలు

4.4 భేదాలు

5. అవగాహన (**1 -**మాడ్యూల్స్)

5.1. అవగాహన

అధ్యాయం -**5**

6. వ్యాసం (8 --మాడ్యూల్స్)

6.1 వ్యాసం - పరిచయం

6.2 విద్యార్థులు -క్రమశిక్షణ

6.3 దేశభక్తి

6.4 సంఘ సేవ

6.5 ఆరోగ్యం - పరిశుభ్రత

6.6. రాజివ్ గాంధీ

6.7 శాస్త్రీయ విజ్ఞానాభివృద్ధి -పరిణామాలు

6.8 పర్యావరణ పరిరక్షణ

అధ్యాయం -**6**

మన పండుగలు (**7 -**మాడ్యూల్స్)

7.1 పరిచయం

7.2దసర

7.3 సంక్రాంతి

7.4 దీపావళి

7.5 ఉగాది

7.6 క్రిష్మస్

7.7 రంజాన్

Rajiv Gandhi University of Knowledge Technologies
(A.P. Government Act 18 of 2008)
IIIT RK Valley, Vempalli (M), YSR Kadapa (Dist.) Andhra Pradesh-516330

Minutes of 3rd Internal BOS Meeting – Information Technology (IT) (Departmental Academic committee (DAC)) (DAC)

The internal BOS committee for Information Technology (IT) has met on 18th December 2017 at IIIT RK Valley and the following recommendations & resolutions have been made.

1. Suggested to change the course "MATLAB" to 'RAPTOR" programming in PUC II, Winter Semister.
2. Suggested to transfer HTML and CSS topics from PUC II, Sem I to PUC I, Sem II.
3. The Committee recomended implementing Information Technology as Credited Course, because it is easy and
4. Students can get into the process of learning any other programing languages swiftly by learning plytton. The committee insisted that if the course is not credited, it may lead to loose interest on subject.

Sl. No.	Name of the internal BOS member	As	Designation	Signature
1	Dr. B. Konda Reddy	Chairman	Dean Academics, IIIT RK Valley	P.V.C. Kishore 18/12/17
2	Mr. Venkat Mohan	External Expert	Lecturer in Computer Engineering, Government Polytechnic College, Vempalli	Venkat 18-12-17
3	Mr. G. Murali	External Expert	Asst. Prof. in CSE, JNTU College of Engineering, Pulivendula	18/12/17
4	Mr. D. Gnanavenkat Kumar	Internal Expert	Mentor in IT, IIIT RK Valley	
5	Mr. B. Ramesh	Internal Expert	Mentor in IT, IIIT RK Valley	18.12.17
6	Mr. J. Vijay Kumar	Convener	Mentor & HOD of IT, IIIT RK Valley	18/12/2017

DEPARTMENT OF INFORMATION TECHNOLOGY

Syllabus:

Year & Semester:	Course Code:	Course Name:	Credits:	L-T-P:
P1S1	I116	Information Technology	0	1-1-0

Unit-1: Fundamentals of Computers: Definition of Computer, Computer Overview – Functionalities of Computer - Block Diagram of a Computer - Functions of the Different Units - Characteristics of Computers - Basic Applications of Computer - Advantages of Computer - Disadvantages of Computer. Computer Types – PC (Personal Computer), Workstation, Mini Computer, Main Frame, Super Computer. Computer Generations – First Generation, Second Generation, Third Generation, Fourth Generation, Fifth Generation.

Unit-2: Computer Hardware & Software: Definition of Hardware and Software – Hardware parts – Ports - Input Devices/Output Devices – Microprocessor (Basic concepts, Clock speed (MHz, GHz) − 16 bit, 32 bit, 64 bit, 128 bit processors) - Concepts of Computer Memory (Byte, Kilo Byte, Mega Byte, Giga Byte, Tera Byte, Peta Byte, Exa Byte, Zetta Byte, Yotta Byte) - Types of memory - Storage devices - Types of Software Application Software, System Software, System utilities - Editor, Loader, Linker, File Manager (Virus, Basics of Operating System- Definition, Types, functions – Examples of application software). Data and Information: Definition – Examples

Unit-3: Number system and Conversions: Decimal Number System – Binary Number System – Octal Number System – Hexadecimal Number System - Binary to Decimal Conversions, Decimal to Binary Conversions, Hexadecimal to Binary Conversion, Binary to Hexadecimal Conversion, Hexadecimal to Decimal Conversion, Decimal to Hexadecimal Conversion

Unit-4: Basics of Networking: Introduction of Networking - Types of Networks (Local Area Network, Metropolitan Area Network, Wide Area Network) - Network Topologies (BUS, RING, STAR, MESH, TREE, HYBRID) - Computer Network Essentials - Types of Internet Connections – Broadband - Wi-fi - WiMAX - Client/Server - Peer-to-Peer Networks - Network Applications - Network Devices

Unit-5: Internet: Uses of Internet – Browser - Uniform Resource Locator (URL) - Domain Extension types (.com, .net, .org, .us, .in, ,biz, .info, .tv) - Define WWW and HTTP - Connecting to Internet - Browser Errors **E-mail Usage:** What is an Electronic mail - Inbox and outbox - Using Emails - Viewing an email - Sending an Email - Saving mails - Sending same mail to various users - Document handling - Sending soft copy as attachment - Enclosures to email - Sending a Portion of document as email

Unit-6: Introduction to Business communication Tools:
OPEN-OFFICE: Creating a document - font operation - bullet and numbering - find & replace - hyper linking - mathematical operation - Create table and flow chart – Macro - Mail

merge - Correcting grammar -protect files – Saving file extensions. **PowerPoint:** Creating single and multiple slide – Animation - manual and automatic slide show - hyper linking **Calc:** Create sheet and rename sheet- table and operation - cells operation - hyper linking – Function (mathematic, logical) - sort and data tools - protection (sheet, workbook).

Books:
1. Computer Fundamentals – by P.K.Sinha
2. Fundamentals of Computer – by Rheema Threja

URLs:
1. https://www.edutechlearners.com/computer-fundamentals-p-k-sinha-free-pdf/
2. https://www.tutorialspoint.com/computer_fundamentals/computer_fundamentals_tutorial.pdf
3. http://www.openofficetutorial.org/

Year & Semester:	Course Code:	Course Name:	Credits:	L-T-P:
P1S2	I126	Information Technology	0	1-1-0

Unit-1 Problem solving methodologies: Understanding of the problem - Solution for the problem - Breaking down solution into simple steps (modular approach) - Identification of arithmetic and logical operations required for solution - Control structure - conditional control and looping (finite and infinite) - Clarity and simplicity of expressions - Use of proper names for identifiers – Comments – Indentation – Documentation - Program maintenance - Running and debugging programs - Syntax errors - Run-time errors - Logical errors **Introduction to Algorithms:** Definition - Algorithm necessity - Qualities of a good algorithm - Algorithm Efficiency **Tracing an Algorithm:** Definition – How to Trace the Algorithm – Example on Tracing Algorithms - Problem set

Unit-2: Introduction to Flow Charts: Flowchart In Programming - Symbols Used In Flowchart - Examples of flowcharts in programming **Variables and Constants:** Definition of Variable and Constants– How to declare variables - Memory mapping into the Variables and Constants **Data Types:** Different Data Types and the description and examples **Operators :** Types of operators (Arithmetic Operators, Relational Operators and Logical Operators) – What are the Arithmetic Operators – Order of Arithmetic Operators – What are the Relation Operators – Use of Relation Operators – What are the Logical Operators and use of Logical Operators – Problem sets on calculating the expressions

Unit-3: Conditional Statements: Structure of the Conditional statements – Ways of using conditional statements (if, if .. else, Nested if) – problem sets on Conditional Statements.
Loop control structures: what is loop? – Uses of loops – types of loops – structure of the loop – what is infinite loop – problem sets on Loops

Unit-4: Lists (Arrays): What is list? – uses of lists – how to create list – Accessing Values in Lists – Inserting values in Lists – problem set on Lists **Strings:** What are the Strings? – Accessing Strings using loops – String operators – problem sets on string

Unit-5: HTML: Basic tags, HTML basics, document tags, empty tags, using lists in web sites, nested and unordered list, menu list, absolute links, relation links in web sites, image and image maps, creation of tables, forms, frames, and their division. Use of colors, headings and animation.

Unit-6: CSS: Intro to CSS - CSS Basics - Concept of CSS-Creating Style Sheet - CSS Properties - CSS Styling (Background, Text Format, Controlling Fonts) - Working with block elements and objects - Working with Lists and Tables -CSS Id and Class-Box Model (Introduction, Border properties, Padding -Properties, Margin properties) - CSS Advanced (Display, Positioning, Floating,Navigation Bar) - CSS Colors

Books:

1. Fundamentals of Computer Algorithms by Ellis and Sartaj Sahni Horowitz
2. Introduction to Python Programming by Rheema Tharaja
3. HTML & CSS design and build websites by Jon Duckett
4. Brilliant HTML and CSS by James Brannan

URLs:

1. https://www.w3schools.com/
2. https://www.khanacademy.org/computing/computer-programming/html-css
3. https://www.cbsesyllabus.in

Year & Semester:	**Course Code:**	**Course Name:**	**Credits:**	**L-T-P:**
P2S1	I216	Information Technology	2	2-1-0

Unit-1: Getting Started: Introduction to Python - an integrated high level language, interactive mode and script mode, **Data types:** Number (Integer - boolean, decimal, octal, hexadecimal; Floating point; Complex), none, Sequence (String,Tuples, List) Sets, Mapping, **Mutable and Immutable Variables:** Variables - Expressions and Statements – Values - Variables and keywords

Unit-2 : Operators and Operands in Python: (Arithmetic, relational and logical operators) - operator precedence - Expressions and Statements (Assignment statement) - Membership operators **Input and Output:** Taking input (using raw_input() and input()) and displaying output (print statement); Putting Comments. **Types of Errors** – Syntax error, Runtime error, Semantic Error

Unit-3 : Functions: Importing Modules (entire module or selected objects), invoking built in functions, functions from math module (for example, ceil, floor, fabs, exp, log, log10, pow, sqrt, cos, sin, tan, degrees, radians), using random() and randint() functions of random module to generate random numbers, composition. **User defined functions:** Defining functions, invoking functions, passing parameters (default parameter values, keyword arguments), scope of variables, void functions and functions returning values, flow of execution

Unit-4: Conditional constructs: if, if-else, Nested if elif else - If Statement - If…else Statement - The elif Statement - Single Statement Suites - Compound Boolean Expressions –

Nested Conditionals - Multi-way Decision Statements - Conditional Expressions

Unit-5: Loops: While, do-while, for, continue and break, Netsted loops - The Infinite Loop - Using else Statement with Loops - Single Statement Suites - For Loop Iterating by Sequence Index - Using else Statement with Loops - Nested Loops **Loop Control Statements:** Break Statement - Continue Statement - Pass Statement

Unit-6: Strings: Creating, initialising and accessing the elements; string operators: +, *, in, not in, range slice [n:m]; comparing strings using relational operators; String functions & methods: len, capitalize, find, isalnum, isalpha, isdigit, lower, islower, isupper, upper, lstrip, rstrip, isspace, istitile, partition, replace, join, split, count, decode, encode, swapcase, String constants, Regular Expressions and Pattern Matching

Books:
1. Introduction to Python Programming by Rheema Tharaja
2. Biginning Python Using Python 2.6 and Python 3.1 by James Payne
3. Python for Informatics Version 2.7.1 by Charles Severance

URLs:
1. https://www.tutorialspoint.com/python/
2. https://docs.python.org/3/tutorial/
3. https://www.learnpython.org/
4. https://www.cbsesyllabus.in

Year & Semester:	**Course Code:**	**Course Name:**	**Credits:**	**L-T-P:**
P2S2	I226	Information Technology	2	2-1-0

Unit-1 : Lists: Concept of mutable lists, creating, initializing and accessing the elements, traversing, appending, updating and deleting elements, composition, lists as arguments
List operations: joining, slicing, + , * , in , not in List functions and methods: len( ), insert( ), append( ), extend( ), sort( ), remove( ), reverse( ), pop( ), list( ), count( ), extend( ), index( ), cmp( ), max( ), min( )
Unit-2 : Dictionaries: Concept of key-value pair, creating, initialising and accessing the elements in a dictionary, traversing, appending updating and deleting elements Dictionary Functions and methods: cmp( ), len( ), clear( ), get( ), has_key( ), items( ), key( ), update( ), values( ), pop( ), fromkeys( ), dict( )

Unit-3: Tuples: Immutable concept, creating, initialising and accessing elements in a tuple, Tuple assignment, Tuple slices, Tuple indexing, **Tuple Functions:** cmp(), len(), max(), min(), tuple(), index(), count(), sum(), any(), all(), sorted(), reversed()

Unit-4 : Searching and Sorting: Selection sort, Insertion sort, bubble sort, merge sort

Unit-5: Opening and reading files: Open text file-opening a text file-syntax-Different modes of opening a file-The file object attributes-Reading from text file-Introducing the Read it program-Example-Reading characters from a line-Reading a line from file-Problem set

Unit-6: Exception Handling Exception: Exception Handling - Except clause - Try ? finally clause - User Defined Exceptions

Books:

1. Introduction to Python Programming by Rheema Tharaja
2. Biginning Python Using Python 2.6 and Python 3.1 by James Payne
3. Python for Informatics Version 2.7.1 by Charles Severance

URLs:

1. https://www.tutorialspoint.com/python/
2. https://docs.python.org/3/tutorial/
3. https://www.learnpython.org/
4. https://www.cbsesyllabus.in

Rajiv Gandhi University of Knowledge Technologies
(A.P. Government Act 18 of 2008)
IIIT RK Valley, Vempalli (M), YSR Kadapa (Dist.) Andhra Pradesh-516330

Minutes of 3rd Internal BOS Meeting-Biology

Department Academic Committee (DAC)

The internal BOS committee for Biology has met on **16th December 2017** at IIIT-R.K.Valley and the following recommendations & resolutions have been made.

1. It is unanimously resolved that the adopted Syllabus of P1S1 has been approved for implementation from academic year 2017 & 2018 (2017 batch onwards).
2. The syllabus of Biology for P1S1, P1S2, P2S1 and P2S2 has been approved for implementation from 2017 batch onwards with effect from academic year 2017-18.
3. To maintain the flow and connection between the units, some units have been rearranged in the syllabus of
4. P1S1, P1S2, P2S1 and P2S2.
5. With the above suggestions and minor modifications, the syllabus of Biology for P1S1, P1S2, P2S1, P2S2 have been approved for implementation for the academic year 2017-2018 (2017 batch onwards).

Sl. No.	Name of the Internal BOS Member	As	Designation	Signature
1	Dr. B. Konda Reddy	Chairman	Dean of Academics IIIT- R.K.Valley	P.V.L.Kishle 16/12/17
2	Prof. N.Yasodamma	External Member	Professor Dept. of Botany, S.V. University, Tirupati	16/12/17
3	Prof. P. Chandramati Shankar	External Member	Professor Dept. of Biotechnology, Y.V. University, Kadapa.	P. Chandramati 16/12/17
4	Dr. A. Job Roger Binny	Internal Member	Mentor Dept. of Biology IIIT- R.K.Valley	16/12/17
5	Dr. G. Tirupati Reddy	Internal Member	Mentor Dept. of Biology IIIT- R.K.Valley	G Tpally 16/12/17
6	Dr. B. Hemavathi	Convener	HOD, Mentor Dept. of Biology IIIT- R.K.Valley	B Hemavathi 16/12/17

DEPARTMENT OF BIOLOGY

Syllabus:

Year & Semester:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P1S1	B117	Biology	4	2-2-1

UNIT-I: INTRODUCTION TO BIOLOGY
Welcome to Biology: Biology Overview; **The Science of Biology:** The Scientific Method, Controlled Experiments

UNIT-II: HISTORY OF LIFE ON EARTH
Formation of Earth and Early Life, Origins of Life, Hypotheses About The Origins of Life; **The Diversification of Life**: First Living Things; **Biological Classification**; Two Kingdom and Five Kingdom Classification; Plant Kingdom and Animal Kingdom

UNIT-III: BACTERIA, ARCHAEA AND VIRUSES (MICROBIOLOGY)
Prokaryotic and Eukaryotic Cells: Prokaryotic Structure: Bacteria, Structure, Reproduction and Biotechnology, Genetic Variation; **Prokaryote Metabolism and Ecology**: Metabolism, Interactions and Ecology, Classification and Diversity; **Viruses**: Intro to Viruses, Bacteriophages, Animal and Human Viruses, Evolution of Viruses, The Biology of Zika Virus.

UNIT-IV: STRUCTURE OF A CELL
Introduction to Cells: Scale of Cells, Cell Theory, Microscopy; **Eukaryotic Cells:** Cell Size, Structure of Plasma Membrane: Fluid Mosaic Model and Cytoplasm, Nucleus and Ribosomes; **Tour of a Eukaryotic Cells:** Endoplasmic Reticulum and Golgi Bodies, Endomembrane System, Mitochondria and Chloroplast, The Cytoskeleton; **Extracellular Structures and Cell-Cell Junctions:** Extracellular Matrix, Plant Cell Walls, Overview of Animal and Plant Cells.

UNIT-V: CELL DIVISION
Introduction To Cell Division: Fertilization Terminology, Gametes, Zygotes, Haploid, Diploid, Zygote Differentiating into Somatic and Germ Cells, Chromosomes, Chromatids and Chromatin; **The Cell Cycle:** Phases of Cell Cycle, Interphase, Mitosis and Meiosis; **Mitosis:** Phases in Mitosis and Bacterial Binary Fission; **Meiosis:** Phases in Meiosis I and Meiosis II, Chromosomal Crossover in Meiosis I, Comparing Mitosis and Meiosis, Sexual Life Cycles; **Cell Cycle Regulation, Cancer and Stem Cells:** Embryonic Stem Cells, Cell Cycle Checkpoints, Cell Cycle Regulators, Cancer, Apoptosis.

UNIT-VI: CELL SIGNALING AND MEMBRANE TRANSPORT
How Cells Signal To Each Other: Introduction to Cell Signaling, Overview of Cell Signaling, Example of a Signal Transduction Pathway, Ligands and Receptors, Signal Relay Pathways, Response to a Signal; **Cell Signaling in Unicellular Organisms;** Yeast Reproduction; **Membranes and Transport; Diffusion, Osmosis and Tonicity**: Introduction, Concentration Gradients, Hypotonic, Isotonic and Hypertonic Solutions (Tonicity); **Passive Transport**: Selective Permeability, Facilitated Diffusion; **Active Transport**: Sodium Potassium Pump, Electrochemical Gradients and Secondary Active Transport, Uniporters,

Symporters and Antiporters; **Bulk Transport**: Endocytosis, Exocytosis, Phagocytosis, and Pinocytosis,

PRACTICALS:

1. Study parts of a simple and compound microscope
2. Diffusion and osmosis experiment
3. Identification of stages from prepared slides showing Mitosis and Meiosis.
4. Squash preparation of onion/Garlic root tip for Mitotic Chromosomes.
5. Bacterial Culture

REFERENCES:

1. www.khanacademy.org
2. NCERT (Biology) and Telugu Academy (Zoology and Botany)
3. Molecular Cell Biology Book by David Baltimore and Harvey Lodish
4. Cell Biology, Genetics, Evolution and Ecology (M.E.), 14/e by DR. P.S. VERMA
5. The Cell: A Molecular Approach Book by Geoffrey M. Cooper
6. Lehninger Principles of Biochemistry Book by Albert L. Lehninger, David L. Nelson, and Michael M. Cox
7. Fundamentals of Biochemistry: Life at the Molecular Level, 5th Edition by Donald Voet, Judith G. Voet, Charlotte W. Pratt
8. Biochemistry by Satyanarayana
9. Microbiology Book by Pelczar

Year and Semester: P1S2	Course Code: B127	Course Name: Biology	No. of Credits: 4	L-T-P: 2-2-1

UNIT-I: DEVELOPMENTAL BIOLOGY

Morphology of plants (stem, root, leaf and flower), Pollination and Fertilization, The Tissues and Tissue Systems, Anatomy of Dicotyledonous and Monocotyledonous Plants, Secondary Growth; Differentiation, Dedifferentiation, and Redifferentiation; Development: Plant Growth Regulators, Photoperiodism, Vernalisation

UNIT-II: ENERGY IN METABOLISM

Introduction to Metabolism: Anabolism and Catabolism; **Energy and Thermodynamics: Laws of Thermodynamics:** Introduction to Energy, First and Second Laws of Thermodynamics and Entropy, Why Heat is Increases Entropy; **Free Energy** Gibbs Free Energy and Spontaneous Reactions, Endergonic, Exergonic, Exothermic and Endothermic; **Enzyme Kinetics:** Introduction to Kinetics, Enzyme Regulation, Cofactors and Coenzymes, Competitive Inhibition, Noncompetitive Inhibition.

UNIT-III: PHOTOSYNTHESIS-I

Introduction to Photosynthesis- ATP and Reaction Coupling: Light and Photosynthetic Pigments; Adenosine Triphosphate (ATP); Hydrolysis Mechanism, Reaction Coupling to Create Glucose-6-Phosphate; Breaking Down Photosynthesis Stages; **The Light-Dependent Reactions:** Conceptual Overview of Light Dependent Reactions and Actors of Photosynthesis: Overview of The Light-Dependent Reactions.

UNIT-IV: PHOTOSYNTHESIS-II

Light Independent Reaction: The Calvin Cycle; C3, C4, CAM Plants; Photorespiration; C4 Photosynthesis, **Plant Responses to Light:** Phototropism and Photoperiodism.

UNIT-V: CELLULAR RESPIRATION-I

Introduction to Cellular Respiration and Redox: Adenosine Triphosphate (ATP), Hydrolysis Mechanism; Oxidation and Reduction in Cellular Respiration; Review from Biological Point-of-View; **Steps of Cellular Respiration: Glycolysis, Pyruvate Oxidation and The Krebs/Citric Acid Cycle.**

UNIT-VI: CELLULAR RESPIRATION-I

Oxidative Phosphorylation and The Electron Transport Chain; Variations on Cellular Respiration: Fermentation and Anaerobic Respiration: Lactic Acid Fermentation, Alcohol or Ethanol Fermentation, Connections Between Cellular Respiration and Other Pathways, Regulation of Cellular Respiration.

PRACTICALS:

1. Identification of plant tissues and tissue systems (Parenchyma, Collenchma, Sclerencyma, Xylem and Phloem).
2. Section cutting of Dicot and Monocot (stem and root).
3. Identification of different plant parts (spotters and specimens).
4. Developing a Method for measuring Peroxidase in Plant Material.
5. Determining the Effect of pH on Enzymatic Activity.
6. Demonstration of Digestion of Starch by Salivary Amylase.
7. Demonstration of Release of O_2 during Photosynthesis by Hydrilla Plant.

REFERENCES:

1. www.khanacademy.org
2. NCERT (Biology) and Telugu Academy (Zoology and Botany)
3. Plant Physiology Book by Eliezer (Eduardo) Zeiger and Lincoln Taiz
4. Plant Physiology Book by Cleon W. Ross and Frank B. Salisbury
5. Textbook Of Medical Physiology by Guyton

Year and Sem:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S1	B217	Biology	4	2-2-1

UNIT-I: CLASSICAL GENETICS AND MOLECULAR GENETICS

Mendelian Genetics: Introduction to Heredity, Mendel and His Peas, Alleles and Genes; Punnett Squares, The Law of Segregation, The Law of Independent Assortment, Probabilities in Genetics**; Non-Mendelian Genetics:** Variations on Mendel's Laws (Overview), Multiple Alleles, Incomplete Dominance and Codominance, Pleiotropy and Lethal Alleles, Polygenic Inheritance and Environmental Effects; **The Chromosomal Basis of Inheritance:** Boveri-Sutton Chromosome Theory, Thomas Hunt Morgan and Fruit Flies, Genetic Linkage and Mapping**; Sex Linkage, Chromosomal Mutations and Non-nuclear Inheritance:** Sex-linked Traits, X-linked Inheritance, X-inactivation, Aneuploidy and Chromosomal Rearrangements, Inheritance of Mitochondrial and Chloroplast DNA.

UNIT-II: CHEMISTRY OF LIFE

Chemical Bonds and Reactions: Ionic, Covalent, and Hydrogen Bond; **Macromolecules: Introduction to Macromolecules: Carbohydrates:** Molecular Structure of Glucose and Fructose, Dehydration Synthesis of a Condensation Reaction, Hydrolysis; **Lipids**: Molecular Structure of Triglycerides (Fats) Saturated Fats, Unsaturated Fats and Trans Fats; Lipid Overview; **Nucleic Acids:** Molecular Structure of DNA and RNA; Antiparallel Structure of DNA Strands; **Introduction to Proteins and Amino Acids**, Peptide Bond Formation.

UNIT-III: DNA AS THE GENETIC MATERIAL

Discovery of DNA: DNA as the "Transforming Principle", Classic Experiments, Hershey and Chase: DNA is The Genetic Material; The Discovery of the Double Helix Structure of DNA; **DNA Replication:** Modes of DNA Replication: Meselson-Stahl Experiment, Molecular Mechanism, Leading and Lagging Strands, DNA Proofreading and Repair, Telomeres and Telomerase.

UNIT-IV: CENTRAL DOGMA (DNA TO RNA TO PROTEIN)

Introduction to Gene Expression (Central Dogma): RNA Transcription and Translation. The Genetic Code, One Gene, One Enzyme; **Transcription:** Overview, Stages. Transcription and m-RNA Processing, Eukaryotic Pre-m-RNA Processing**; Translation**: Overview, t-RNAs and Ribosomes, Stages, Overview of Protein Structure, Tertiary Structure of Proteins, Protein Targeting.

UNIT-V: GENE REGULATION

Gene Regulation in Prokaryotes (Bacteria) Operons: Overview, The LAC Operon, The TRP Operon; **Gene Regulation in Eukaryotes**: Overview, Transcription Factors, Regulation after Transcription.

UNIT-VI: BIOTECHNOLOGY

Introduction to Biotechnology: DNA Cloning: Overview, Restriction Enzymes and DNA Ligase, Bacterial Transformation and Selection, **DNA Analysis Methods:** Polymerase Chain Reaction (PCR) Gel Electrophoresis, DNA Sequencing; **Stem Cells**: Embryonic Stem Cells.

PRACTICALS:

1. Problems related to Monohybrid Cross
2. Problems related to Dihybrid Cross
3. Estimation of Sugar and Starch
4. Estimation of Protein and Fats
5. Extraction of DNA
6. Demonstration of PCR
7. Demonstration of Gel Electrophoresis
8. Demonstration of Paper chromatography

REFERENCES:

1. www.khanacademy.org
2. NCERT (Biology) and Telugu Academy (Zoology and Botany)
3. Molecular genetics by david freifelder

4. Molecular Biology of the Gene, 7th Edition. James D. *Watson*, Cold Spring Harbor Laboratory.
5. Biotechnology by B.D. Singh

Year and Sem:	Course Code:	Course Name:	No. of Credits:	L-T-P:
P2S2	B227	Biology	4	2-2-1

UNIT-I: HUMAN BIOLOGY-I

Animal tissues-1 (Epithelial and Muscular tissue); Animal tissues-2 (Connective and Nervous tissue)**; Digestive System:** Alimentary Canal, Digestive Glands, Digestion of Food, Obsorption, Disorders; **Pulmonary Systems:** Respiratory Organs, Mechanism of Breathing and Exchange of Gases, Regulation, Disorders; **Circulatory System:** Red Blood Cells, Circulatory System and The Heart, Hemoglobin, Components of Blood; **The Kidney and Nephron:** The Kidney and Nephron, Secondary Active Transport in The Nephron**;**

UNIT-II: HUMAN BIOLOGY-II

The Neuron and Nervous System: Anatomy of a Neuron, Overview of Neuron Structure and Function, The Membrane Potential; **The Synapse**: Electrotonic and Action Potentials, Saltatory Conduction in Neurons, Neuronal Synapses (Chemical), Neurotransmitters and Receptors; Central Nervous system- forebrain, midbrain and hind brain**; Muscles:** Myosin and Actin, Muscle Contraction, Anatomy of a Skeletal Muscle Fiber**; The Endocrine System:** Endocrine Glands and Hormones; Hormones of Heart, Kidney, and Gastrointestinal Tract, Mechanism of Hormone Action; **Human Reproductive System (**male and female).

UNIT-III: IMMUNOLOGY

Immunology: Types of Immune Responses: Innate and Adaptive, Humoral Vs. Cell-Mediated, B Lymphocytes (B Cells), Professional Antigen Presenting Cells (APC) and MHC II Complexes, Helper T Cells, Cytotoxic T Cells and MHC I Complexes, Review of B Cells, CD4+ T Cells and CD8+ T Cells, Role of Phagocytes in Innate or Nonspecific Immunity, Inflammatory Response.

UNIT-IV: EVOLUTION, THE TREE OF LIFE

Evolution and Natural Selection : Introduction, Darwin, Evolution and Natural Selection, Variation in a Species; **Evidence For Evolution**; **Population Genetics:** Hardy-Weinberg Equation, Allele Frequency and The Gene Pool; Mechanisms of Evolution, Genetic Drift, Bottleneck Effect and Founder Effect; Natural Selection in Populations; **Species and Speciation:** Biodiversity and Natural Selection, Genetic Variation, Gene Flow, and New Species, **Evolutionary Trees:** Introduction to phylogenetic tree.

UNIT-V: ECOLOGY

Introduction to Ecology: Ecosystems and Biomes, Flow of Energy and Matter Through Ecosystems, Food Chains and Food Webs; **Population Growth and Regulation:** Exponential and Logistic Growth in Populations, Population Regulation, Predator-Prey Cycles; **Community Ecology:** Interactions in Communities, Ecological Interactions, Niches and Competition, Ecological Succession; **Intro to Biogeochemical Cycles:** Introduction to Biogeochemical Cycles, The Water Cycle, The Carbon Cycle, The Nitrogen Cycle, The Phosphorus Cycle and Eutrophication.

UNIT-VI: BIODIVERSITY AND CONSERVATION

Biodiversity: Global Biodiversity, Biodiversity Hotspots; **Levels of Biodiversity:** Genes, Ecosystem and Biodiversity; **Threats to Biodiversity:** Human Activities, Introduced Species, Extinction of Biodiversity; **Protecting Biodiversity:** Conservation and The Race to Save Biodiversity; The Power of The Individual, Local and Global Policies;

PRACTICALS:

1. Demonstration of Blood Groups-(A, B, O and AB)
2. Hardy-Weinberg equilibrium problems.
3. Water holding capacity.
4. pH of soil , hardness of water, DO , Salinity, alkalinity of Water.
5. Field trip

REFERENCES:

1. www.khanacademy.org
2. NCERT (Biology) and Telugu Academy (Zoology and Botany)
3. Organic Evolution -Dr. Veer Bala *Rastogi*
4. Eugene Odum - Ecology
5. Textbook of Medical Physiology - Guyton
6. Immunology Textbook by Barbara A. Osborne and Janis Kuby