### COURSE : BACHELOR OF ARTS (B.A.)

### **Program Outcome**

Bachelor of Arts (B.A.) is a three-year degree program recognized by Kurukshetra University, Kurukshetra and follows the syllabus prescribed by the university. Our students are allowed to choose from any of the two subjects from the cluster of History, Economics, Political Science, Mathematics, Music (Instrumental), and Punjabi (Elective) with two Compulsory subjects Hindi and English as per university norms. After completing the three-year degree program, students will be able to attain Life Skills, Critical Thinking Skills and Employability Skills in the field of social sciences, literature and humanities. The program also empowers the graduates to appear for various competitive examinations or choose the post graduate program of their choice.

### **Course Outcome: English**

### Year: 1st Semester: 1st

#### **Course: EN21 ENGLISH**

After successful completion of the course, the students will be able to

- Understand one of the most important genres of literature i.e. essay writing
- Transcription and exact pronunciation of English words
- Certain grammatical components i.e. verbs, nouns, pronoun, adjectives, adverbs, conjunctions, interjection etc. and their uses in sentence formation
- Certain tips of how to attempt a paragraph on any topic concerning students' life, social and environmental issues

#### Year: 1<sup>st</sup> Semester: 2<sup>nd</sup>

### **Course: EN22 ENGLISH**

Upon successful completion of the course, the students will be able to

- Understand one of the most important genres of literature i.e. story writing and how literature can be understood through stories
- Transcription and syllabic words and how to enhance vocabulary by making antonyms and synonyms and by adding suffix and prefix to the words
- Certain grammatical components and their use in sentence formation

#### Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup>

### **Course: EN23 ENGLISH**

After successful completion of the course, the students will be able to

• Understand one of the most important genres of literature i.e. poetry and learn how literature has evolved through poetry and how very complex ideas concerning universal knowledge and values are expressed in concise language of poetry

- Major literary terms and devices and their use to enhance the beauty of literature
- Explanation and comprehension of poetic stanzas
- Certain grammatical components like conjunctions, clauses, infinitive, gerund, and participle forms of verb and their application in formation of English sentences

#### Year: 2<sup>nd</sup> Semester: 4<sup>th</sup>

#### **Course: EN24 ENGLISH**

After successful completion of the course, the students will be able to

- Understand one of the most important genres of literature i.e. one act play and learn how the playwright creates magic through characters who discuss ideas concerning universal knowledge and values
- Explanation of important extracts from the play
- Translation from Hindi into English and vice versa to have a better understanding of the ideas expressed in different languages
- Certain composition skills like resume writing, letter writing, use of language in different situations to understand the language in a better way

#### Year: 3<sup>rd</sup> Semester: 5<sup>th</sup>

#### Course: EN25 ENGLISH

After successful completion of the course, the students will be able to

- Understand one of the most important genres of literature i.e. Novel writing
- A better opportunity to learn Indian English and India's freedom struggle through novel writing
- Important forms of novel and literary terms and their relevance in enrichment of literature
- Intonation and its use in understanding the difference in meaning of a particular speech while placing stress on different words
- Use of transitional words and phrases and clauses in sentence formation to understand English language in a better way

Year: 3<sup>rd</sup> Semester: 6<sup>th</sup>

### **Course: EN26 ENGLISH**

After successful completion of the course, the students will be able to

- Understand one of the most important genres of literature i.e. Play writing
- A better opportunity to learn England's most famous Playwright i.e. William Shakespeare and his style of expressing the life style of his own era through dialogues of characters in the play
- Literary terms and devices and their Importance in enrichment of literature
- Important composition skills i.e. Precis writing, Summarizing, Abstract, paraphrasing One-word substitution, Unseen comprehension passage, Email writing, Memorandum,

RTI, Circular writing to have in-depth knowledge of language

Course Outcome: Hindi
Year: 1 <sup>st</sup> Semester: 1 <sup>st</sup>
Course: HI21 HINDI COMP.
पाठ्यक्रम के सफल समापन पर, छात्र इसके बारे में जानेंगे
<ul> <li>निर्धारित मध्यकालीन कवियों के माध्यम से निर्गुण एवं सगुण भक्ति का ज्ञान, अनुभूतिगत सौन्दर्य प</li> </ul>
अभिव्यक्तिगत सौन्दर्य से अवगत कराना।
<ul> <li>आदिकालीन समाज की राजनीतिक, सामाजिक, धार्मिक, आर्थिक एवं साहित्यिक परिस्थितियों का ज्ञान कराना।</li> </ul>
<ul> <li>काव्यशास्त्र के माध्यम से काव्य के विभिन्न तत्वों, स्वरूप एवं भेदों से परिचित कराना।</li> </ul>
Year: 1 <sup>st</sup> Semester: 2 <sup>nd</sup>
Course: HI22 HINDI COMP.
पाठ्यक्रम के सफल समापन पर, छात्र इसके बारे में जानेंगे
<ul> <li>निर्धारित पाट्यपुस्तक के माध्यम से आधुनिक समाज की समस्याओं से अवगत कराना एवं उनका समाधान प्रस् करना।</li> </ul>
<ul> <li>मध्यकालीन साहित्य के माध्यम से भक्ति के उद्भव एवं विकास का ज्ञान, भक्ति के विभिन्न रूपों का परिचय।</li> </ul>
<ul> <li>व्यावहारिक हिन्दी के अन्तर्गत भाषा के विभिन्न रूपों का ज्ञान प्रदान कराना।</li> </ul>
Year: 2 <sup>nd</sup> Semester: 3 <sup>rd</sup>
Course: HI23 HINDI COMP.
पाठ्यक्रम के सफल समापन पर, छात्र इसके बारे में जानेंगे
<ul> <li>आधुनिक हिन्दी कविता पुस्तक के माध्यम से विद्यार्थियों को विशिष्ट कवियों की साहित्यिक जानकारी देते ह उन्हें उनके अनुभूतिगत वैशिष्टय और अभिव्यक्तिगत सौष्ठव से परिचित करवा कर उनके ज्ञान में वृद्धि करने व</li> </ul>
प्रयास करना।
<ul> <li>हिन्दी साहित्य के इतिहास के माध्यम से 'रीतिकाल' की पृष्ठभूमि और उपलब्धियों से परिचित करवाना।</li> </ul>
<ul> <li>प्रयोजनमूलक हिन्दी के माध्यम से कम्प्यूटर, इंटरनेट अनुवाद का ज्ञान कराना।</li> </ul>
Year: 2 <sup>nd</sup> Semester: 4 <sup>th</sup>
Course: HI24 HINDI COMP.
पाठ्यक्रम के सफल समापन पर, छात्र इसके बारे में जानेंगे
<ul> <li>कथा—साहित्य के माध्यम से विद्यार्थियों को समाज की विविध समस्याओं से अवगत कराने का प्रयास कराना।</li> </ul>
<ul> <li>उपन्यास, कहानी, नाटक और निबन्ध की विकास–यात्रा का परिचय कराना।</li> </ul>
<ul> <li>पारिभाषिक शब्दावली की आवश्यकता और उसका हिन्दी भाषा में क्या महत्त्व है – इसकी जानकारी विद्यार्थियों को अवगत कराना।</li> </ul>
Year: 3 <sup>rd</sup> Semester: 5 <sup>th</sup>
Course: HI25 HINDI COMP.
पाठ्यक्रम के सफल समापन पर, छात्र इसके बारे में जानेंगे
<ul> <li>आधुनिक हिन्दी कवियों की दृष्टि एवं सामाजिक सरोकार, जीवन दर्शन, चिंतन एवं कलात्मक विशिष्टता व समझना।</li> </ul>
<ul> <li>आधुनिक हिन्दी कविता के इतिहास–अन्वेषण, विकास, रचनाओं की क्रमबद्ध जानकारी एवं मानव समाज परिवर्तनशील मूल्यों से प्रभावित साहित्य–दृष्टि से अवगत होना।</li> </ul>

 प्रयोजनमूलक हिनदी के विविध रूपों – संक्षेपण, पत्रलेखन एवं पल्लवन लेखन की सैद्धान्तिक एवं प्रायोगिक जानकारी प्रदत्त करना।

#### Year: 3<sup>rd</sup> Semester: 6<sup>th</sup>

### Course: HI26 HINDI COMP.

### पाठ्यक्रम के सफल समापन पर, छात्र इसके बारे में जानेंगे

- निबन्ध के विविध रूपों, निबन्धकार एवं निबन्ध–कला, चिंतन एवं दर्शन की भास्वर रेखाओं से रूबरू होना।
- हरियाणवी भाषा एवं हरियाणवी लोक साहित्य की विविध विधाओं, रचनाओं एवं साहित्य पर पड़ने वाले समाजगत परिवर्तन का ज्ञान प्रदत्त करना।
- हिन्दी पत्रकारिता के स्वरूप, सिद्धान्त एवं लेखन विषयक जागरूकता प्रदान करना।

Course Outcome: Economics
Year: 1 <sup>st</sup> Semester: 1 <sup>st</sup>
Course: EC21 ECONOMICS
Upon successful completion of the course, students will be able to
• Explain what economics is and explain why it is important
Describe and differentiate between major economic systems
• Get introduced to supply and demand and the basic forces that determine equilibrium in a market economy
• Explain the function of market and prices as allocative mechanisms
• Explain and calculate other elasticities using common economics variables
• Learn how markets organize core economics activities such as Production, distribution
and consumption and the growth of productive resources
• Use the concepts of consumer, producer and total surplus to explain why markets typically lead to efficient outcomes
• Explain how consumer behavior shapes the demand curve with respect to utility and
loss
• Analyse the relationship between inputs used in production and the resulting outputs
and costs
Year: 1 <sup>st</sup> Semester: 2 <sup>nd</sup>
Course: EC22 ECONOMICS
Upon successful completion of the course, students will be able to
• Learn how markets organize core economics activities such as Production, distribution and consumption and the growth of productive resources
• Analyse the relationship between inputs used in production and the resulting outputs
and costs
• Analyse a firm's profit maximizing strategies under all the market conditions
• Use the fundamental techniques to think about a number of policy questions relayed to
the operation of the real economy
Year: 2 <sup>nd</sup> Semester: 3 <sup>rd</sup>
Course: EC23 ECONOMICS
Upon successful completion of the course, students will be able to
• Define Macro Economics and explain how economic indicators like GDP are used to
assess the state of the economy
• Identify key macroeconomics indicators and measures of economics change, growth
and development
• Explain how national income circulate among different sectors in an economy

• Explain how national income is calculated with the help of value added, income and

expenditure	e method
Year: 2 <sup>nd</sup> Semeste	er: 4 <sup>th</sup>
Course: EC24 EC	CONOMICS
Upon successful co	ompletion of the course, students will be able to
Explain ho	w multiplier and accelerator work in an economy
• Learn abo	ut the determinants of macroeconomics conditions (National output,
employmen	nt and inflation), causes of business cycles and interactions of monetary and
fiscal polic	у
• Explain m	oney, functions of money and the role of financial markets play in an
economy	
• Define inf	lation and explain how the rate of inflation is calculated and also the
consequence	ces of inflation
Year: 3rd Semeste	er: 5 <sup>th</sup>
Course: EC25 EC	CONOMICS
Upon successful c	ompletion of the course, students will be able to
• Know the c	levelopment process in India after independence
• Have requi	site understanding of the basic structure of Indian economy
• Understand	l, interpret, compare and contrast, explain the need of planning and know
the change	s through planning that led to evaluation of Indian Economy
• Analyze th	e reasons behind income inequality, regional imbalance, inadequate finance
etc.	
Year: 3rd Semeste	er: 6 <sup>th</sup>
Course: EC26 EC	CONOMICS
Upon successful c	ompletion of the course, students will be able to
• Interpret ar	nd justify the growth rate of the economy, fiscal deficit and contributions of
different se	ectors toward the economy
• Explain wh	at is balance of payments and how it affects domestic economy.
• Explain va	rious international organizations i.e. World Trade Organization, World Bank

and International Monetary Fund and also their functions

Course Outcome: History
Year: 1 <sup>st</sup> Semester: 1 <sup>st</sup>
Course: ANCIENT INDIA (FROM EARLIEST TIMES TO THE GUPTA AGE) Opt-(i)
Upon successful completion of the course, students will be able to
• List the sources and evidence for reconstructing the history of Ancient India
Discuss the main features of Harappan and Saraswati Civilization
• Analysis the way of earlier historians interpreted the history of India and while doing so
they can write the alternative ways of looking at the past
Analysis Vedic polity and state, rise of Magdha Empire
• Examine the Mauryan polity under Chandra Gupta Maurya and Ashoka
Discuss the Achievements of Kushanas and Satvahanas
• Examine the expansion of Gupta Empire under Samudragupta and Chandragupta- II
Year: 1 <sup>st</sup> Semester: 2 <sup>nd</sup>
Course: HISTORY OF INDIA (600 TO 1526 AD) Opt-(i)
Upon successful completion of the course, students will be able to
• Describe the development of art and architecture during Post-Gupta period
• Describe the TriParties Struggle among Pratiharas, Palas and Rashtrakutas
• Explain features of feudal society and economy
• Impacts of Invasions of Mahmood Ghaznavi and Muhammad Ghori on society and economy
• Discuss the expansion of Delhi Sultanate under Qutubuddin Aibek, Iltutmish, Balban, Alauddin Khilji and Muhammad Tughlaq
• Analysis the main features of Administration ,Economic Developments during 1206-
1526 A.D.: Agriculture, Industry, Trade and Commerce Art and Architecture of Delhi
Sultanate
• Throw light on the administration of Bahmani and Vijaynagar
• Throw light on the Bhakti and Sufi Movements
Year: 2 <sup>nd</sup> Semester: 3 <sup>rd</sup>
Course: Political History of India (1526-1857AD) Opt-(i)
Upon successful completion of the course, students will be able to
• Describes the establishment of Mughal Empire under Babur and Humayun
Describe the administrative reforms of Shershah Suri
• Describe the relation of Mughals with Rajputs
• Throw light on the Deccan Policy of Aurangzeb, Administration of Mughals with special reference to Land Revenue System

- Describe the Mansabdari and Jagirdari systems
- Discuss the circumstances of the battles of Carnatika and establishment of British Rule

in Bengal

- Discuss the establishment of British with Subsidiary Alliance System and Doctrine of Lapse
- Throw light on the Uprising of 1857: Causes and Consequences

### Year: 2<sup>nd</sup> Semester: 4<sup>th</sup>

### Course: INDIAN NATIONAL MOVEMENT OPT-(I)

Upon successful completion of the course, students will be able to

- Discuss the emergence and growth of national consciousness among the Indians.
- Analysis the circumstances of the formation of Indian National Congress.
- Throw light on the Ideology, Programmes of Moderates and Extremists.
- Describes the circumstances of the partition of Bengal and emergence of Swadeshi and Boycott Movement.
- Throw light on the Home Rule Movement.
- Describe growth of Revolutionary Movement during 1905 1919.
- Describe the circumstances of the formation of Muslim League and its role in communal politics during 1906 1919.
- Describe the Rowlett Satyagrah and Jallianwala massacre.
- Discuss the emergence of Mahatma Gandhi in Indian politics.
- Analysis the circumstances and expansion of Non-Cooperation Movement.
- Describe the role of Bhagat Singh and HSRA in national movement.
- Throw light on Round Table Conferences and Poona Pact.
- Describe the causes and growth of Civil Disobedience Movement. Write an essay on Subhash Chandra Bose and INA in National Movement.
- Critically examine the growth of communal politics and role of Muslim League in the Partition of India.

Year: 3rd Semester: 5th

### Course: RISE OF MODERN WORLD Opt-(ii)

Upon successful completion of the course, students will be able to

- Explain the main causes of the Transition from Feudalism to Capitalism in Europe
- Throw light on Renaissance: Origins, Emergence and Results
- Throw light on Reformation: Origins, Emergence and Results
- Describe the Shift of Economic Balance from the Mediterranean to Atlantic Region
- Describe the Early Colonial System: Motives, Process and Consequences of Colonization of Americas
- Throw light on the Mercantile Revolution: Origins and Results, Scientific Revolution: Origins and Impact
- Throw light on the Glorious Revolution: Origins and Results

• Throw light on the , Industrial Revolution: Origins, Progress and Impact, Agricultural Revolution: Origins, Progress and Impact

#### Year: 3rd Semester: 6th

#### Course: MODERN EUROPE Opt-(ii)

Upon successful completion of the course, students will be able to

- Throw light on causes and consequences of French Revolution.
- Describe the emergence and decline of Napoleon Bonaparte.
- Explain the main conditions and significance of Congress of Vienna.
- Describe the nature and impacts of the concert of Europe.
- Discuss the nature and growth of Metternich system
- Describe unification of Italy and Germany.
- Critically examine foreign policy of Bismarck.
- Throw light on the formation of Triple Entente.
- Describe the circumstances of partition of Africa.
- Describe the main causes and consequences of World War-I.
- Describe the main causes and consequences of Bolshevik Revolution in Russia.
- Write an essay on the treaty of Versailles and its consequences
- Throw light on Rise of Nazism and Fascism: Nature and Consequences
- Describe the main causes and consequences of World War-II.

Course Outcome: Mathematics
Year: 1 <sup>st</sup> Semester: 1 <sup>st</sup>
Course: BM-111 ALGEBRA
Upon successful completion of the course, students will be able to
• Determine rank of a matrix, eigen values, eigen vectors, characteristic equation and
characteristic polynomial of square matrices.
• Understand Hermitian and skew-Hermitian matrices, unitary and orthogonal matrices
and to solve related problems.
• Find solution of homogeneous and non-homogeneous system of linear equations using
matrices
• Determine relation between roots and coefficients of a general polynomial equation in
one variable
• Solve cubic and biquadratic equations. Application of Descarte's rule of sign
Course: BM-112 CALCULUS
Upon successful completion of the course, students will be able to
• Calculate the limit of functions, examine the continuity of functions, understand
differentiability of different type of functions, successive differentiation of functions
and series expansions
• Understand the concepts of asymptotes, curvature, evolutes and involutes of a curve.
• Determine singular points of a curve and their types.
• To understand rectification of curves and to apply the reduction formulae.
• Determine area bounded by curves and volumes and surface area of solids formed by
revolution of curves
Course: BM-113 SOLID GEOMETRY
Upon successful completion of the course, students will be able to
• Understand the concept of a second degree equation representing different conic
sections and its classification and properties
• Learn general form of equation of a sphere and to solve problems related to
intersection of spheres, tangent plane and line, orthogonality
• Learn equations of cones and cylinders and to solve related problems
• Familiarize with concepts of conicoids and related tangent plane, director sphere,
normal, paraboloids, reduction of second degree equations
Year: 1 <sup>st</sup> Semester: 2 <sup>nd</sup>
Course: BM-121 Number Theory and Trigonometry
Upon successful completion of the course, students will be able to
• Understand the concepts of divisibility, Fundamental Theorem of Arithemetic. Linear
Congruences, Fermat's theorem. Wilson's theorem and its converse. Linear

Diophanatine equations in two variables • Understand the concepts of Euler function, Chinese Remainder Theorem, Quadratic residues, Greatest integer function [x], Number of divisors and the sum of divisors of a natural number n • Understand the concepts of De Moivre's Theorem and its Applications, Inverse circular and hyperbolic functions and their properties **Course: BM-122 Ordinary Differential Equations** Upon successful completion of the course, students will be able to Understand the basic concepts of ordinary differential equations and to learn various • techniques of finding exact solutions of certain solvable first order differential equations • Develop the skills of solving homogeneous and non-homogeneous second order linear ordinary differential equations with constant coefficients and with variable coefficients **Course: BM-123 Vector Calculus** Upon successful completion of the course, students will be able to • Understand and solve problems related to scalar and vector product of vectors. Learn vector differentiation and directional derivatives and their problem solving • Learn gradient, divergence and curl operators. Apply knowledge and these tools in problem solving • Understand vector identities, Laplacian operator. Learn vector integration and line integral. Solve problems using these concepts • Learn surface and volume integral formulations and their evaluation. Prove Gauss Divergence, Green's and Stoke's theorems. Realize importance of Green, Gauss and Stokes' theorems Year: 2<sup>nd</sup> Semester: 3<sup>rd</sup> **Course: BM-231 Advanced Calculus** Upon successful completion of the course, students will be able to • Understand and to prove Rolle's Theorem, mean value theorems and their geometrical interpretations. To determine indeterminate forms. • Learn conceptual variations while advancing from one variable to several variables in calculus, limit and continuity, partial differentiation of such functions. To understand composite functions, homogeneous functions and to solve related problems. • Understand differentiability of real valued functions of two variables and to prove associated results. To determine maximum and minimum of functions of two variables and to apply multivariable calculus in optimization problems. Evaluate double and triple integrals. To learn about Dirichlet integrals, Beta and Gamma functions and to solve related problems

**Course: BM-232 Partial Differential Equations** 

Upon successful completion of the course, students will be able to

- Understand total differential equations and basic concepts of partial differential equations. To learn methods and techniques for solving linear PDEs of first order
- Apply theory of PDEs to determine integral surfaces through a given curve and to find orthogonal surfaces. To understand compatible systems and Charpit method, Jacobi method methods for solving PDEs
- To learn techniques of solving second order PDEs

### Course: BM-233 Statics

Upon successful completion of the course, students will be able to

• Learn the concepts of friction and laws of friction, centre of mass and centre of gravity and to solve problems related to these concepts

Year: 2<sup>nd</sup> Semester: 4<sup>th</sup>

### Course: BM-241 SEQUENCES AND SERIES

Upon successful completion of the course, students will be able to

- Understand basic concepts of real number system and set theory. Preliminary results on neighbourhood of a point, interior and limit points, open sets, closed sets etc.
- Learn real sequences, their limit, boundedness and convergence. To find convergence and divergence of a sequence. To understand Cauchy sequence, subsequence and to prove related theorems.
- Understand infinite series and its basic properties. Attain skills to determine convergence of a series of real numbers by applying various tests.
- Understand absolute and conditional convergence of alternating series and related tests. Learn the basic concepts of pointwise convergence and uniform convergence of sequence and series of functions.

### **Course: BM-242 SPECIAL FUNCTIONS AND INTEGRAL TRANSFORMS**

Upon successful completion of the course, students will be able to

- Understand singular points of a differential equation and to solve such differential equation by power series method. Learn Hypergeometric differential equation, Hypergeometric function and its properties.
- Know Bessel's differential equation and its solution. Understand recurrence relations, generating function and othogonality of Bessel's function. Understand Bessel integral. Attain skills to make use of Bessel functions in scientific problem solving.
- Familiarise with Legendre's differential equation and its solution in the form of Legendre functions. Understand recurrence relations, generating function and othogonality of Legendres function, Rodrigues' formula. Apply knowledge in problem solving.
- Know Hermite's differential equation and its solution in the form of Hermite functions. Understand recurrence relations, generating function and othogonality of Hermite

function, Rodrigues' formula.

- Know about Laplace transforms and its properties in detail and to apply those in solving differential equations.
- Familiarize with Fourier transforms of functions, properties of Fourier transform, inverse Fourier transforms and relation between Laplace and Fourier transforms. Develop skill of applying Fourier transforms to solve differential equations.

#### Course: BM-243 PROGRAMMING IN C & NUMERICAL METHODS

Upon successful completion of the course, students will be able to

- Familiarize with C programming language. Learn elements of C, data types, constants and variables, operations and operators, statements and expressions. Use these tools for writing C programs.
- Learn Input/ Output functions in C, to write reading and writing statements in C, decision making statements and structures in C. Apply this knowledge to use as tools in writing C programs.
- Understand loops and arrays, their types, characteristics and structures. Attain the skill to write C programs which involve arrays and multiple iterations.
- Learn strings of characters, their declaration, input/ output, operations on strings and functions which handle strings. Learn declaration, types and calling of user defined functions in C.
- Understand errors and their types. Learn techniques to obtain numerical solutions of algebraic and transcendental equations.
- Attain numerical skills to find solutions of system of linear equations by different methods.

#### Year: 3rd Semester: 5th

### Course: BM-351 REAL ANALYSIS

Upon successful completion of the course, students will be able to

- Learn basic theory of Riemann integration. Learn fundamental theorem and mean value theorem of integral calculus
- Understand improper integrals and to have knowledge to test their convergence. Understand integral as a function of a parameter. Apply this knowledge for problem solving
- Understand concepts of metric spaces, sub spaces and their properties. Learn open, closed and bounded sets, interior and limit points, Cauchy sequence and completeness
- Learn dense sets, compact and separable metric spaces and related results. Learn important theorems viz. Baire's category theorem, Banach contraction principle, Bolzano–Weierstrass property, Heine–Borel theorem. Use this basic knowledge for life -long learning purposes

#### Course: BM-352 GROUP and RINGS

Upon successful completion of the course, students will be able to

- Recognize the mathematical objects called groups, their elementary properties, order of a group, subgroup, cyclic groups and their properties
- Understand the notions of cosets, normal subgroups, and quotient groups. Know homomorphisms, isomorphisms and their properties and to prove three isomorphism theorems
- Learn about ring, subring, integral domain, field and ideal and related results
- Understand quotient rings, Euclidean ring, ring homomorphisms, ring isomorphisms and fundamental isomorphism theorems

### Course: BM-353 NUMERICAL ANALYSIS

Upon successful completion of the course, students will be able to

- Learn different interpolation and extrapolation methods and their applications. Apply numerical methods to obtain derivatives
- Understand numerical methods for evaluating integrals and solving differential equations and to develop skill of applying these methods for future use in scientific problems

#### Year: 3<sup>rd</sup> Semester: 6<sup>th</sup>

### Course: BM-361 REAL AND COMPLEX ANALYSIS

Upon successful completion of the course, students will be able to

- Learn about Beta and Gamma functions and their applications
- Visualize complex numbers as points of  $\mathbb{R}^2$  and stereographic projection of complex plane on the Riemann sphere. Know De Moivre's Theorem and its Applications. Learn about trigonometric, circular and hyperbolic functions and their properties
- Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy–Riemann equations. Apply knowledge to solve related problems

### Course: BM-362 LINEAR ALGEBRA

Upon successful completion of the course, students will be able to

- Understand the concepts of vector spaces, subspaces, bases and their properties; linear transformations and their rank and nullity and to use those concepts for problem solving
- Learn to determine eigen values, eigen vectors and characteristic polynomial of linear transformations and their further use in investigation and solution of problems
- Have knowledge of inner product spaces, orthogonalization and diagonalization of matrices/ linear transformations and to apply that in further learning and for scientific applications
- Learn adjoint operation, Hermitian, unitary, normal and triangular forms of linear transformations and related problem solving

#### Course: BM-363 DYNAMICS

Upon successful completion of the course, students will be able to

- Learn fundamentals of dynamics like velocity, acceleration, angular velocity and acceleration, Newton's laws of motion, simple harmonic motion and to develop the skill of solving simple dynamical problems
- Understand concepts of work, power, energy and projectile motion and to solve related problems
- Learn about Kepler's laws of the planetary motions

Course Outcome: Political Science
Year: 1 <sup>st</sup> Semester: 1 <sup>st</sup>
Course: PS21(I) INDIAN CONSTITUTION Opt-(i)
Students will learn about
Basic knowledge of Indian Constitution
• Fundamental Rights and Duties
Directive Principles of State Policies
• Union & State Executive and Legislature
Judicial System
Constitutional Amendment Process
Rural Local Government i.e. Panchayati Raj System
Year: 1 <sup>st</sup> Semester: 2 <sup>nd</sup>
Course: PS22(I) INDIAN POLITICS Opt-(i)
Students will learn about
Practical Knowledge of Indian Federal System
Centre-State Relation
Party System – National and State Level Parties
• Defection
Election Process
<ul> <li>Politics and Core Issues i.e. Caste, Religion, Language and Regionalism.</li> </ul>
Year: 2 <sup>nd</sup> Semester: 3 <sup>rd</sup>
Course: PS23(II) Indian Political Thinkers Opt-(ii)
Students will learn about
• Knowledge regarding the Social, Political, Religious, Economic, Educational,
Nationalist and Democratic Ideas
Contribution to Political Thoughts of different Indian Political Thinkers.
Year: 2 <sup>nd</sup> Semester: 4 <sup>th</sup>
Course: PS-24(II) INDIAN POLITICAL THINKERS OPT(II)
Students will learn about
• Knowledge regarding the Political, Socialistic, Decentralization, Religious, Economic,
Educational, Nationalist and Democratic Ideas
Contribution to Political Thoughts of different Indian Political Thinkers
Year: 3 <sup>rd</sup> Semester: 5 <sup>th</sup>
Course: PS25 (II) INTERNATIONAL RELATIONS Opt-(ii)
Students will learn about
• Theoretical Knowledge of International Relation – its development and autonomy,

- National Power and its Limitations
- Balance of Powers
- Collective Securities
- Environmental Issues and globalization

### Year: 3<sup>rd</sup> Semester: 6<sup>th</sup>

### Course: PS26 (II) INTERNATIONAL ORGANIZATION

Students will learn about

- Knowledge regarding the development of International Organizations
- League of Nations and United Nations Organizations and different Organs of UNO General assembly, Security Council, General Secretary, Economic and Social Council, Trusteeship Council and International Court of Justice
- UNO and its role in maintaining Peace in the World
- India's claim for Permanent Seat in UNO

Course Outcome: Music (Instrumental)
Year: 1 <sup>st</sup> Semester: 1 <sup>st</sup>
Course: MI21 MUSIC INSTRUMENTAL
Students will learn about
• The Historical study and detailed Description of the Ragas i.e Yaman, Alhiya Bilaw
and Bhupali
• Ability to write the notation of the Ragas
• The history of Indian Music from Vedic Period to 12 <sup>th</sup> Century
Structure of Sitar Instrument and its techniques
• Ability to write the notation of the Talas i.e. Ektaal, Chutaal and Teentaal
• Knowledge about the contribution of the Musician i.e. Pt. Ravi Shankar, Ustad Vilay
Khan and Ustad Alludin Khan
Year: 1 <sup>st</sup> Semester: 2 <sup>nd</sup>
Course: MI22 MUSIC INSTRUMENTAL
Students will learn about
• The Historical study and detailed Description of the Ragas i.e. Kafi, Varindavani Sarar
and Desh
• Ability to write the notation of the Ragas
Classification of Indian Musical Instruments
Concept of Time Theory in Indian Music
Role of Media in Development of Indian Classical Music
• Ability to write the notation of the Talas and playing ability i.e. Rupak, Jhaptaal ar
Tilwara
• Merits and Demerits of the Instrumentalists
Playing of National Anthem on Sitar
Year: 2 <sup>nd</sup> Semester: 3 <sup>rd</sup>
Course: MI23 MUSIC INSTRUMENTAL
Students will learn about
• The Historical study and detailed Description of the Ragas i.e. Chayanut, Jaijaiwan
Bhairav and Bhairavi
• Ability to write the notation of the Ragas
Knowledge about Swyambhoo Nad
Method of Tuning the Instrument
Different styles of Sitar vadan
• Ability to write the notation of the Talas and playing ability i.e. Tivra, Deepchandi and
Dadra

• Knowledge about the contribution of the Musician i.e. Ustad Abdul Halim Zaffar Khan

and	l Pt. Pannalal Ghosh
Year: 2 <sup>n</sup>	<sup>d</sup> Semester: 4 <sup>th</sup>
Course:	MI24 MUSIC INSTRUMENTAL
Students	will learn about
• The	e Historical study and detailed Description of the Ragas i.e. Shudh Kalyan, Khamaj
and	l Kedar
• Ab	ility to write the notation of the Ragas
• Ro	le of Science in Promoting Educational and Cultural Aspect
• Th	e history of Indian Music in Medieval Period
• Bas	sic knowledge about the different Instruments i.e Sarod, Tabla and Violin
• Ab	ility to write the notation of the Talas and playing ability i.e. Chautaal, Ada Chautaal
and	l Ektaal
• Kn	owledge about the contribution of the Musician i.e. Smt. Annapurna Devi and Ustad
Ina	yat Khan
Year: 3 <sup>r</sup>	<sup>d</sup> Semester: 5 <sup>th</sup>
Course:	MI25 MUSIC INSTRUMENTAL
Students	will learn about
• The	e Historical study and detailed Description of the Ragas i.e. Todi, Miyan Ki Malhar,
Pu	ria Dhanshri and Basant
• Ab	ility to write the notation of the Ragas
• Ori	gin and development of notation system
• Ori	gin and development of Indian Orchestra
• The	e Role of Music in Cultural Exchange
• Ab	ility to write the notation of the Talas and playing ability i.e. Dhamar, Teentaal and
Jha	ptaal
• Kn	owledge about the contribution of the Musician i.e Mustak ali Khan and Nikhil
Ba	nerjee
Year: 3 <sup>rd</sup>	<sup>d</sup> Semester: 6 <sup>th</sup>
Course:	MI26 MUSIC INSTRUMENTAL
Students	will learn about
• The	e Historical study and detailed Description of the Ragas i.e. Kamod, Bihag, Deshkar,
Ba	har and Bhimplasi
• Ab	ility to write the notation of the Ragas
• Me	erits and Demerits of the Notation system
• De	velopment of Indian Classical Music during 17 <sup>th</sup> & 19 <sup>th</sup> Century
• The	e Role of Electronic Media in popularizing Indian Classical Music
• Ab	ility to write the notation of the Talas and playing ability i.e. Dadra, Keherwa and

Sultaal

• Knowledge about the contribution of the Musician i.e. Ali Akbar Khan and Vilayat Khan

Course Outcome: Punjabi (Elective)
Year: 1 <sup>st</sup> Semester: 1 <sup>st</sup>
Course: EP21 PUNJABI ELECTIVE
Students will learn about
• Different poets, their writings struggle, messages regarding human values, ethics, tolerance, harmony and love for nature
• Novel which gives the real picture of life drawn by the writer and also knowledge of grammar
Year: 1 <sup>st</sup> Semester: 2 <sup>nd</sup>
Course: EP22 PUNJABI ELECTIVE
Students will learn about
• Lives of different poets and get a chance to connect with the community, nature and humanity
• Punjabi Galap which increase interest of students in Punjabi Literature and enhance the knowledge of grammar
Year: 2 <sup>nd</sup> Semester: 3 <sup>rd</sup>
Course: EP23 PUNJABI ELECTIVE
Students will learn about
• Punjabi Sufi poetry which is a glorious asset to Punjabi literature, history, culture and
different aspects of life
• Short stories which give deep messages to the students and enrich students with
grammar
Year: 2 <sup>nd</sup> Semester: 4 <sup>th</sup>
Course: EP24 PUNJABI ELECTIVE
Students will learn about
• Punjabi Sufi and Kissa Kaav which connect the students with social life, Punjabi literature and the human intellect reached to a certain level
• Knowledge about the history of Punjabi literature from 1701-1850 and also knowledge of grammar
Year: 3 <sup>rd</sup> Semester: 5 <sup>th</sup>
Course: EP25 PUNJABI ELECTIVE
Students will learn about
• Indian Philosophy for the betterment of the whole humanity that helps in overcoming
their mental disorders
• Short stories that give long lasting messages of life
• Vartak & Translation to enrich students grammatically
Year: 3 <sup>rd</sup> Semester: 6 <sup>th</sup>

### Course: EP26 PUNJABI ELECTIVE

Students will learn about

- Indian Philosophy of various Gurus which is beyond all social discrimination
- History of Punjabi literature from beginning to 1700.
- Fiction and translation as a part of grammar.