

**Programme Matrix: Bachelor of Science – Physics, Computer Science [2023 Batch]**



**Kristu Jayanti College**

**AUTONOMOUS** Bengaluru

Reaccredited 'A++' Grade by NAAC | Affiliated to Bengaluru North University

**FACULTY OF SCIENCES**

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**Programme Outcomes**

After successful completion of B.Sc. honours in Physics and Computer Science, a student will be able to:

PO1: integrate scientific temper; spirit of enquiry, humanism and reform

PO2: apply scientific knowledge and skills ethically for societal development and entrepreneurship

PO3: design, execute and interpret the results of experiments in Physics and Computer Science involving programming concepts and scientific experiments in physics

PO4: appraise programming skills by implementing the structure and development methodologies of software systems.

PO5: infer a modern scientific IT tool and techniques to solve problems in the area of computer science

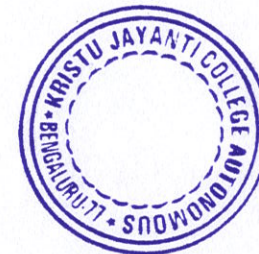
PO6: acquire systematic understanding of core area of classical mechanics, quantum mechanics, electromagnetic theory, electronics, optics, special theory of relativity and modern physics.

PO7: analyse physical problems and improve problem-solving skills that are required to solve different types of Physics-related problems with well-defined solutions using natural laws.

Date of Approval: 10/2/23

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FACULTY OF SCIENCE  
KRISTU JAYANTI COLLEGE AUTONOMOUS  
K. Narayanapura, Kothanur PO  
Bengaluru - 560077



**Programme Matrix: Bachelor of Science – Physics, Computer Science [2023 Batch]**

<b>I Semester</b>			
<b>Course Type</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Course Outcomes</b>
DSC	21PHY2T411	Mechanics and Properties of Matter	<ol style="list-style-type: none"> <li>1. Learn about accuracy of measurement and sources of errors, importance of significant figures</li> <li>2. Know how g can be determined experimentally and derive satisfaction</li> <li>3. Understand the basics of Elasticity and its importance in beams, and girders</li> <li>4. Acquire the knowledge of surface tension and viscosity and appreciate the methods adopted.</li> </ol>
DSC	21PHY2L211	Mechanics and Properties of Matter Practical	<ol style="list-style-type: none"> <li>1. Calculate the elastic moduli of different materials</li> <li>2. Set-up and perform experiments related to Viscosity and Surface tension</li> <li>3. Design experiments to determine 'g'</li> <li>4. Apply the workdone by variable force.</li> </ol>
DSC	21CSC2T411	Programming in C	<ol style="list-style-type: none"> <li>1. Design flowchart and algorithms for C programs</li> <li>2. Construct sequential, iterative problems and input/output operations on text files</li> <li>3. Differentiate between decision control structures and loop control structures</li> <li>4. Distinguish between data representation through arrays, functions, function using pointers, structures and unions</li> </ol>
DSC	21CSC2L211	Programming in C Practical	<ol style="list-style-type: none"> <li>1. Develop C programs using sequential conditional and iterative constructs</li> <li>2. Design programs using user defined and derived data types, string operations and functions in C language</li> <li>3. Use structures, files and pointers as per the requirement</li> </ol>
AECC	22ENG1T312	Musings in English Literature	<ol style="list-style-type: none"> <li>1. Articulate the relevant issues of society through the imbibed knowledge of prose</li> <li>2. Identify and appreciate nuances of poetry</li> <li>3. Implement the basic concepts of grammar and its usage.</li> </ol>
AECC	21KAN1T312	Saahithya Sangama I	<ol style="list-style-type: none"> <li>1: ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ವಿವಿಧ ಸಾಮಾಜಿಕ ಮೌಲ್ಯ ಮತ್ತು ಜವಾಬ್ದಾರಿಗಳನ್ನು ಅರಿಯುವರು.</li> <li>2: ಭಾಷಾ ಕೌಶಲವನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿಕೊಳ್ಳುವರು.</li> <li>3: ವಿದ್ಯಾರ್ಥಿಗಳು ತಮ್ಮ ಜೀವನದ ಸೃಜನಶೀಲತೆಯ ಮಹತ್ವವನ್ನು ಚರ್ಚಿಸುವರು.</li> <li>4: ಹರಿಹರೆಯ ವಯಸ್ಸಿನ ನಮನೈಗಳು ಹಾಗೂ ಪರಿಹಾರಗಳನ್ನು ವಿಶ್ಲೇಷಿಸುವರು.</li> </ol>

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AECC	21HINIT312	Hindi Kahani aur Prayajanmulak Hindi	1: हिन्दी कहानी विधा का ज्ञान ग्रहण करने की क्षमता का विकास। 2: विद्यार्थियों में सामाजिक यथार्थ और मुल्यांकन करने का विकास। 3: विद्यार्थियों में कहानी विधा का वर्णन करने की क्षमता का विकास। 4: विद्यार्थियों में कहानी का विश्लेषण और भाषा कौशल में प्रवीणता।
AECC	22AENIT311	Listening and Comprehension in English	1. identify the barriers to listening and describe the key components that contribute to effective listening 2. use their grammatical knowledge to refine their speech and writing 3. analyse complex human situations and challenges that emerge from the prescribed texts.

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II Semester			
Course Type	Course Code	Course Title	Course Outcomes
DSC	21PHY2T421	Electricity and Magnetism	<ol style="list-style-type: none"> <li>1. Understand the fundamental principles of electrostatics, able to employ methods of calculus to calculate electric field from a distribution of charges</li> <li>2. Learn mathematical methods of Gauss' law to calculate electric field for problems involving symmetry</li> <li>3. Acquire knowledge of magnetic field through the understanding of Ampere's law and apply it to compute the field in problems</li> <li>4. Understand Biot-Savart law and use to compute the field due to current carrying conductors.</li> </ol>
DSC	21PHY2L221	Electricity and Magnetism Practical	<ol style="list-style-type: none"> <li>1. Design current and voltage theorem circuits.</li> <li>2. Understand the concept of resonance and apply it to practical applications</li> <li>3. Determine the figure of merit of instruments</li> </ol>
DSC	21CSC2T421	Data Structures	<ol style="list-style-type: none"> <li>1. Understanding the fundamental analysis of data structures, dynamic memory management, recursive procedures and usage of pointer variables</li> <li>2. Applying suitable sorting and searching algorithms for data structure applications</li> <li>3. Articulate non-linear data structures of stack and queue and legal operations permitted on them</li> <li>4. Understanding the concepts, operations of linked list and its application</li> <li>5. Comprehend the basic data structures of tree terminologies with its application.</li> </ol>
DSC	21CSC2L221	Data Structures Practical	<ol style="list-style-type: none"> <li>1. Execute recursive functions for tower of Hanoi and binomial coefficient</li> <li>2. Develop programs for searching and sorting techniques</li> <li>3. Write programs explaining the data structures operations</li> </ol>
AECC	22ENG1T322	Glimpses: Readings from English Literature	<ol style="list-style-type: none"> <li>1. Identify the themes and relevant issues through the study of prose and poetry</li> <li>2. Develop the skill to identify the pertinent themes and characters in the novel</li> <li>3. Implement new approaches in speaking and writing skills.</li> </ol>
AECC	21KANIT322	Saahithya Sangama II	<ol style="list-style-type: none"> <li>1: ಸಾಹಿತ್ಯದಲ್ಲಿ ವ್ಯಕ್ತವಾಗಿರುವ ಮಾನವೀಯ ಮೌಲ್ಯಗಳನ್ನು ಅರಿಯುವರು.</li> <li>2: ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ಸಾಮಾಜಿಕ ಮೌಲ್ಯಗಳನ್ನು ಅರಿಯುವರು.</li> <li>3: ಯುದ್ಧದಿಂದಾಗುವ ಅನಾಹುತಗಳನ್ನು ಅರಿಯುವರು.</li> <li>4: ಮಾನವಿಲ್ಲದ ಜಾತಿ ಬೇಧಭಾವಗಳ ಬಗ್ಗೆ ಅರಿಯುವರು.</li> <li>5: ಜೀವನ ಕೌಶಲವನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿಕೊಳ್ಳುವರು.</li> </ol>

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AECC	21HINIT322	Hindi Kavitha aur Anuvaad Koushal	1: हिन्दी कविता का विश्लेषण एवं समझने की योग्यता का विकास। 2: विद्यार्थियों में सामाजिक यथार्थ और मूल्यांकन करने का विकास। 3: कविता में वर्णित कथा का वर्णन एवं काव्य सृजन करने का विकास। 4: अनुवाद एवं भाषा कौशल में प्राविण्यता।
AECC	22AENIT321	Conversation Practice in English	1. Identify the barriers to listening and describe the key components that contribute to effective listening 2. Use their grammatical knowledge to refine their speech and writing 3. Analyse complex human situations and challenges that emerge from the prescribed texts.
AECC	21EVSIT321	Environmental Studies	1. Understand the concept of Environment and ecosystems 2. Gain knowledge on various components controlling the stability of ecosystem 3. Understand the Policies and laws pertaining to the welfare of life forms.

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III Semester			
Course Type	Course Code	Course Title	Course Outcomes
DSC	21PHY2T431	Optics and Wavemotion	<ol style="list-style-type: none"> <li>1. Acquire and understand the concepts of Wave optics</li> <li>2. Apply the knowledge to analyse the interference and diffraction pattern and evaluate the functions of an optical instrument</li> <li>3. Discuss the concepts of optical instruments and properties of laser</li> <li>4. Illustrate the importance and applications of forced oscillations and resonance</li> </ol>
DSC	21PHY2L231	Optics And Wavemotion Practical	<ol style="list-style-type: none"> <li>1. Perform experiments to calculate optical and material parameters</li> <li>2. Design optical experiments using spectrometer and lasers</li> <li>3. Perform experiments to determine optical activity of different solutions</li> </ol>
DSC	21CSC2T431	Programming in Java	<ol style="list-style-type: none"> <li>1. Understand Procedural and Object-oriented Programming Paradigms and compare java programming with C and C++</li> <li>2. Implement the basic programming constructs in java to develop simple java programs</li> <li>3. Design and Analyze reusable programs using the concepts of inheritance, interfaces and packages</li> <li>4. Identify and Design the concepts of Multithreading and Exception handling to develop efficient and error free codeS</li> <li>5. Apply the concept of event driven GUI and create applications using applets and AWT.</li> </ol>
DSC	21CSC2L231	Programming in Java Practical	<ol style="list-style-type: none"> <li>1. Build sequential, decision making and iterative Java programs</li> <li>2. Develop Java programs using Object oriented programming concepts</li> <li>3. Design GUI based applications using frames.</li> </ol>
AECC	21ENG1T332	Symphony of English Literature	<ol style="list-style-type: none"> <li>1. Identify the themes and relevant issues through the study of prose and poetry</li> <li>2. Develop the skill to identify the pertinent themes and characters in the novel</li> <li>3. Implement new approaches in speaking and writing skills.</li> </ol>
AECC	21KAN1T332	Saahithya Sangama III	<ol style="list-style-type: none"> <li>1: ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ವಿವಿಧ ಸಾಮಾಜಿಕ ಮೌಲ್ಯ ಮತ್ತು ಜವಾಬ್ದಾರಿಗಳನ್ನು ಅರಿಯುವರು.</li> <li>2: ಭಾಷಾ ಕೌಶಲವನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿಕೊಳ್ಳುವರು.</li> <li>3: ವಿದ್ಯಾರ್ಥಿಗಳು ತಮ್ಮ ಜೀವನದ ವರ್ತಮಾನದ ಘಟನೆಗಳ ಕುರಿತು ಚರ್ಚಿಸುವರು.</li> <li>4: ಹದಿಹರೆಯ ವಯಸ್ಸಿನಲ್ಲಿ ಅರಿಯಬೇಕಾಗಿರುವ ಶಾಂತಿ-ಸೌಹಾರ್ದತೆಯ ಕುರಿತು ವಿಶ್ಲೇಷಿಸುವರು.</li> <li>5: ಜೀವನದಲ್ಲಿ ಮಾನವನು ಬೆಳೆಸಿಕೊಳ್ಳಬೇಕಾದ ಬಹುಮುಖ್ಯ ಆದರ್ಶ, ತತ್ವಗಳ ಕುರಿತು ಚರ್ಚಿಸುವರು.</li> </ol>

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AECC	21HINIT332	Hindi Natak Sahitya aur Sanchar Maadhyam evam Hindi	1:हिन्दी नाटक विधा को समझना और अभिनय करने की योग्यता का विकास। 2:विद्यार्थियों में सामाजिक यथार्थ और मुल्यांकन करने का विकास। 3: नाटक लेखन और पठन में रुचि एवं सृजनात्मक कौशल्य का विकास। 4: संचार माध्यम कला में प्राविण्यता।
AECC	21AENIT331	Essential English Reading	1. Recognize the techniques of effective reading and demonstrate their competence in comprehension. 2. Articulate their thoughts and structure written compositions as needed in official contexts 3. Formulate their responses to contemporary challenges that emerge from the prescribed texts.

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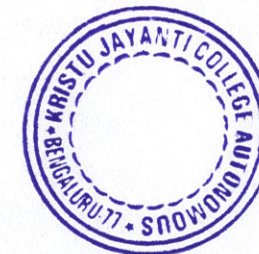


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IV Semester			
Course Type	Course Code	Course Title	Course Outcomes
DSC	21PHY2T441	Heat and Thermodynamics	<ol style="list-style-type: none"> <li>1. Understand the laws thermodynamics and thermodynamic processes</li> <li>2. Acquire the knowledge about entropy</li> <li>3. Analyse the different thermodynamic phases</li> <li>4. Derive the Plank's law for black body radiation.</li> </ol>
DSC	21PHY2L241	Heat and Thermodynamics Practical	<ol style="list-style-type: none"> <li>1. Set up and perform experiments related to thermal conductivity</li> <li>2. Adopt an understanding of thermodynamics principles to effectively solve mechanical problems in day-to-day life.</li> <li>3. Determine temperature using simple thermoelectric materials.</li> </ol>
DSC	21CSC2T441	Internet Technology	<ol style="list-style-type: none"> <li>1. Understand the basic internet technologies and protocols involve in internet and service rendered by internet</li> <li>2. Write Standards/Compliant HTML code and CSS code to present HTML pages in different attractive ways</li> <li>3. Develop dynamic web pages by using java script (client side programming) and write well/valid XML documents.</li> <li>4. Quote examples related to JavaScript functions</li> <li>5. Apply knowledge to work on XML with DTD an XML schemas</li> </ol>
DSC	21CSC2L241	Internet Technology Practical	<ol style="list-style-type: none"> <li>1. Create basic HTML tags</li> <li>2. Design and webpages using java script and CSS</li> <li>3. Manages webpages using XML Tags.</li> </ol>
AECC	21ENG1T342	Ruminations of English Literature	<ol style="list-style-type: none"> <li>1. Articulate the relevant social issues and thematic representation in prose and poetry</li> <li>2. Analyse the characters, plot, setting and themes of novel</li> <li>3. Acquire vital employability skills and employment opportunities with in-depth knowledge of writing skills.</li> </ol>
AECC	21KANIT342	Saahithya Sangama IV	<ol style="list-style-type: none"> <li>1: ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ವಿವಿಧ ಸಾಮಾಜಿಕ ಮೌಲ್ಯ ಮತ್ತು ಜವಾಬ್ದಾರಿಗಳನ್ನು ಅರಿಯುವರು.</li> <li>2: ಭಾಷಾ ಕೌಶಲವನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿಕೊಳ್ಳುವರು.</li> <li>3: ವಿದ್ಯಾರ್ಥಿಗಳು ತಮ್ಮ ಜೀವನದಲ್ಲಿ ಧಾರ್ಮಿಕ ಸಹಿಷ್ಣುತೆಯ ಮಹತ್ವವನ್ನು ಚರ್ಚಿಸುವರು.</li> <li>4: ಶ್ರೀಸಾಮಾನ್ಯನ ಬದುಕಿನ ಸಮಸ್ಯೆಗಳು, ಬವಣೆಗಳು ಹಾಗೂ ಪರಿಹಾರಗಳನ್ನು ವಿಶ್ಲೇಷಿಸುವರು.</li> <li>5: ದಮನಿತ ಲೋಕದ ಶೋಷಣೆಯ ಭಿನ್ನ ರೂಪಗಳ ಕುರಿತು ಚರ್ಚಿಸುವರು.</li> </ol>

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AECC	21HINIT342	Hindi Laghu Upanyas aur Bhasha Ke Vividh Roop	1: हिंदी उपन्यासों का ज्ञान ग्रहण और समझने की योग्यता का विकास। 2: विद्यार्थियों में सामाजिक यथार्थ और मुल्यांकन करने का विकास। 3: लघु उपन्यास की कथा का वर्णन और विश्लेषण करने की क्षमता का विकास। 4: भाषा के विविध रूपों एवं भाषा कौशल में प्राविण्यता।
AECC	21AENIT341	Fundamentals of English Written Communication	1. Examine the features of effective writing and demonstrate their skills in complex, non-formulaic writing 2. Identify and fix common stylistic errors in written English 3. Analyze the representation of cross-cutting issues in literary works.
AECC	21INCIT341	India and Indian Constitution	1. Evaluate the philosophy of the Constitution and its structure 2. Appraise the powers and functions of various offices under the Constitution 3. Analyze the Indian values, Ideals and the role of Constitution in a Democracy.

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