



પરિપત્ર:

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટીની સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજોનાં આચાર્યશ્રીઓને સવિનય જણાવવાનું કે સાયન્સ વિદ્યાશાખા હેઠળનો NEP-૨૦૨૦ અંતર્ગત સ્કીલ એન્હાન્સમેન્ટ કોર્સનો સેમેસ્ટર-૫ નો અભ્યાસક્રમ આ સાથે સામેલ છે. આ બાસ્કેટમાં સાયન્સનાં વિષયો આપવામાં આવેલ છે.

માનનીય કુલપતિશ્રીની મંજૂરી અનુસાર સદર અભ્યાસક્રમ શૈક્ષણિક વર્ષ જુન, ૨૦૨૫ થી અમલવારી કરવાની રહે છે. સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજો દ્વારા તેની અમલવારી કરવા જણાવવામાં આવે છે.

નોંધ: બીકેએનએમયુ/એકેડેમિક/૨૬૫/૨૦૨૫ તા.૧૨.૦૬.૨૦૨૫નાં પરિપત્રમાં “Electronics and Instrumentation”નો અભ્યાસક્રમ ઉમેરવામાં આવેલ છે.



૧૧/૬/૨૦૨૬
ખાસ ફરજ પરના અધિકારી
(એકેડેમિક)

ક્રમાંક/બીકેએનએમયુ/એકેડેમિક/૫૦૬/૨૦૨૫

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી,

સરકારી પોલીટેકનિક કેમ્પસ,

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી રોડ,

ખડીયા, જૂનાગઢ-૩૬૨૨૬૩

તા.૦૪/૦૮/૨૦૨૫

પ્રતિ,

- ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી સંલગ્ન સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમો ચલાવતી તમામ કોલેજોના આચાર્યશ્રીઓ તરફ....

નકલ સાદર રવાના:-

- માન.કુલપતિશ્રી/કુલસચિવશ્રીનાં અંગત સચિવશ્રી.
- પરીક્ષા નિયામકશ્રી, ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી, જૂનાગઢ

નકલ રવાના જાણ તથા યોગ્ય કાર્યવાહી અર્થે:

- સીસ્ટમ મેનેજરશ્રી, આઈ.ટી.સેલ વિભાગ (વેબસાઇટ ઉપર પ્રસિદ્ધ થવા અર્થે.)



BHAKTA KAVI NARSINH MEHTA UNIVERSITY
JUNAGADH



BOARD OF STUDIES
FACULTY OF SCIENCE
BASKET FOR SKILL ENHANCEMENT COURSE
(SEMESTER- V)

EFFECTIVE FROM JUNE, 2025

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Course Level	5.5		Internal Marks	25
Programme	B.Sc Honours		External Marks	25
Semester	V		Practical	25
Category of Course	SEC		Theory	25
Course Credit	2		Practical Int Exam Duration	4 Hrs
Teaching Hours	1T+2P		Total	-
Course Code	SEC301-3C		External Theory Exam Duration	1 hrs
Course Title	Pharmaceutical Chemistry			

Course objectives:

- The objectives of the course is to introduce the chemistry students to the pharmaceutical chemistry with special emphasis on the organic drugs, its classification and synthesis.
- Also introduce them to the API regulations and generic drug synthesis and self-employment.

Course learning outcomes:

- After the completion of the course the students will be able to understand API its classification and formulation of medicines.
- Also get knowledge of regulation related to manufacturing and concept of generic drugs.
- The students will be able to develop the synthetic route for simpler drugs and will have developed experimental skill to synthesize some generic drugs and check its purity within certain laboratory limitations.

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Course Theory Component (1-Credit)

Sem	Unit No.	Syllabi	Teaching Hours
5	1	General introduction to drugs and medicine, API and excipients (Binders, fillers, disintegrants, lubricants, coatings, preservatives, coloring agents). Nomenclature (Chemical name, generic name, brand name), Classification of drugs based on their chemical structural unit, therapeutic effects (Functional or pharmacodynamic agents, chemotherapeutic agents, vitamins and hormones) and route of administration. Definition of important terms: ADME, Agonist and antagonist, Antigen and antibody, antibiotic. Mechanism of action of sulphonamide. Definition (therapeutic activity) and synthesis of antibiotics (Metronidazole, Amoxycillin); antibacterial and antifungal agents (Sulfamethoxazole, Sulfacetamide, Trimethoprim), Cardiovascular (Glyceryl trinitrate), anti-leprosy (Dapsone), anti-cancer (cis-platin).	8T
	2	Criterion of good synthesis and types of synthesis (linear, convergent and block), Retrosynthetic approach and explanation of synthons, synthetic equivalents (various examples only of synthons and their synthetic equivalents); API production and some regulations. Important generic drugs and OTC drugs and their socioeconomic importance. Definition(therapeutic activity) and synthesis of some generic drugs and their therapeutic activity: Analgesics, Antipyretic, Anti-inflammatory - (Aspirin, paracetamol, ibuprofen, naproxen, diclofenac)	7T

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Course Practical component (1-Credit)

Sem	Syllabi	Teaching Hours
5	Preparation, TLC monitoring, isolation, Purification, crystallization, yield calculation and percentage purity of the following pharmaceutically important molecules 1. Aspirin (Acetylsalicylic acid) 2. Paracetamol from p-Aminophenol(Acetaminophen) 3. Benzocaine 4. Hippuric acid 5. Methyl salicylate from salicylic acid 6. Metformin 7. Sulphanilamide from acetanilide	30P

Suggested Reading:

1. G.L. Patrick: Introduction to Medicinal Chemistry, Oxford University Press, UK.
2. Hakishan, V.K. Kapoor: Medicinal and Pharmaceutical Chemistry, Vallabh Prakashan, Pitampura, New Delhi.
3. Graham Patrick - An introduction to drug synthesis, Oxford University Press (2015)
4. William O. Foye, Thomas L., Lemke , David A. William: Principles of Medicinal Chemistry, B.I. Waverly Pvt. Ltd. New Delhi.
5. Designing Organic Synthesis – S. Warren, Wiley.
6. Some Modern Methods for Organic Synthesis – W. Carruthers.
7. Principles of Organic Synthesis – R. Norman and J. M. Coxon.
8. Advanced Organic Chemistry Part B – F. A. Carey and R. J. Sundberg.
9. Organic Synthesis –Concept, Methods, Starting Materials – J. Fuhrhop.
10. Modern Synthetic Reactions – H. O. House, W. A. Benjamin.
11. Disconnection Approach – Warren.
12. Vogel's Text book of practical organic chemistry.
13. Textbook of Medicinal chemistry-II by Dr. Bhawna sharma and Upendra kumar

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Evaluation pattern: Two credit course. (1T+1P)

Internal (25-Marks Practical)

INTERNAL EVALUATION SCHEME		
2-Credit (1T+1P) Total 50 marks		
NO	Particulars	Marks
1	Mid Semester Exam (Mandatory)	13 (Practical)
2	Class Test	03
3	Open book exam/test	03
4	Self-test/ Online test	03
5	Essay/Article writing	03
6	Quizzes/Objective test	03
7	Assignment	03
8	Research/Dissertation	03
9	Viva/Oral exam	03
10	Paper presentation/Seminar	03
11	Field Assignment	03
12	Poster Presentation	03
13	Attendance	03
14	Project/journal Work	03
	Total	25

Note: Sr.No.1 is mandatory. Select any Four from Sr.No.2 to 14.

Each Contains three marks. Student should secure 09 Marks for passing in internal Exam.

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External (25-Marks Theory) Paper style

Ques. No.	Particulars	From which Unit	Marks
1	Write any two out of three	1	10
2	Write any two out of three	2	10
3	Write any one out of two	From each Unit	05
		Total Marks	25

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Course Level	5.5		Internal Marks	-
Programme	B.Sc Honours		External Marks	-
Semester	V		Practical	25
Category of Course	SEC (Practical)		Theory	25
Course Credit	2		Practical Int Exam Duration	02:00 Hrs
Teaching Hours	60		Total	-
Course Code			External Theory Exam Duration	-
Course Title	Crime Scene & Death scene investigation			

Course Objectives:

- Introduce students to the principles and procedures of crime scene management, including the evaluation, documentation, sketching, and systematic processing of a crime scene.
- Develop the ability to identify, recognize, and handle physical evidence, emphasizing proper techniques for search, collection, safety, preservation, packaging, sealing, and labeling to maintain evidentiary integrity and chain of custody.
- Explain the classification and role of physical evidence in criminal investigations and legal proceedings, highlighting its probative value and application in crime scene reconstruction.
- Provide knowledge of different types of deaths encountered in forensic practice, including natural, accidental, suicidal, and homicidal, and train students in identifying the cause and manner of death.
- Teach students the forensic procedures for examining the body and death scene, including recognizing signs of struggle, estimating time since death (early and late postmortem changes), and identifying the victim.
- Equip students with skills for systematic and ethical death scene investigation, correlating scene findings with medico-legal evidence for accurate forensic interpretation.

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Course Learning Outcomes: After completion of the course student can:

- Describe the principles and procedures involved in crime scene management, including evaluation, documentation, sketching, and systematic searching of the crime scene.
- Identify and collect physical evidence using correct methods for preservation, packaging, sealing, labeling, and forwarding while maintaining the chain of custody and ensuring safety protocols.
- Classify various types of physical evidence and explain their forensic significance and probative value in criminal investigations and legal proceedings.
- Apply knowledge of crime scene reconstruction techniques to interpret events and reconstruct the sequence of actions that occurred during the crime.
- Distinguish between different manners of death (natural, accidental, suicidal, and homicidal) and explain the forensic indicators associated with each.
- Conduct preliminary death scene investigations, including examination of the dead body, recognition of signs of struggle, and estimation of time since death based on early and late postmortem changes.
- Evaluate and document findings from death scenes, integrating observations from the body and the surrounding scene to assist in identification and cause of death determination.

Course Contents

Sem	Unit No.	Syllabi	Teaching Hours
5	1	UNIT – 1 Crime scene management: I.1 - Introduction, Evaluation and processing of scene of crime. I.2 - Documenting the scene, Crime scene sketching, Steps in sketching a crime scene. I.3 - Method of sketching a crime scene. I.4 - The crime scene search, Crime scene search method, Processing of physical evidence I.5 - Discovering, recognizing and examining of physical evidence.	30

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		I.6 - Collection, Safety measures for evidence collection. I.7 - Preservation, Packaging, sealing, labelling and forwarding of physical evidences, Maintaining the chain of custody, Probative value of physical evidences, I.8 - Reconstruction of scene of crime. I.9 - Introduction to physical evidences, Types of physical evidences, Classification and Role of physical evidences in Criminal Investigations & Trails.	
	2	UNIT – II Death Scene Investigation: II.1 - Cause of death, Natural deaths, Accidental deaths, Suicide, Homicide. II.2 - Stage of death, Signs of struggle. II.3 - Examination of dead body at crime scene. II.4 - Classification of death. II.5 - The signs and time scene death, Early signs, Late signs. II.6 - Examination of the body, Identifying the victim. II.7 - Examination of scene of crime	

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INTERNAL EVALUATION SCHEME		
NO	Particulars	Marks
1	Mid Semester Exam/ Practical Exam (Mandatory)	13
2	Class Test	03
3	Open book exam/test	03
4	Open note exam/test	03
5	Self-test/ Online test	03
6	Essay/Article writing	03
7	Quizzes/Objective test	03
8	Class assignment	03
9	Home assignment	03
10	Reports Writing	03
11	Research/Dissertation	03
12	Case Studies	03
13	Viva/Oral exam	03
14	Group Discussion	03
15	Role Play	03
16	Paper presentation/Seminar	03
17	Language Lab work	03
18	Interview	03
19	Craft work	03
20	Co-curricular work	03
21	Field Assignment	03
22	Poster Presentation	03
23	Attendance	03
24	Project Work	03
	Total	25

Note: Sr.No.1 is mandatory. Select any Four from Sr.No.2 to 24.
Each Contains three marks. Student should secure 09 Marks for passing in internal Exam.

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Course Level	5.5		Internal Marks	-
Programme	B.Sc Honours		External Marks	-
Semester	V		Practical	25
Category of Course	SEC		Theory	25
Course Credit	2		Practical Int Exam Duration	02:00 Hrs
Teaching Hours	60		Total	50
Course Code			External Theory Exam Duration	-
Course Title	Mathematical Computation Using WX Maxima (FOSS) {Practical BASED Course}			

Course Objectives:

- Familiarize students with the user interface, various menus, inbuilt constants, variables, and library functions for efficient mathematical computation.
- Enable students to simplify and factorize mathematical expressions symbolically, and solve linear equations, systems of linear equations, and polynomial equations.
- Train students to compute limits, left-hand and right-hand limits at points of discontinuity, and generate Taylor series expansions for functions.
- Teach students how to compute derivatives, higher-order derivatives, partial derivatives, and perform indefinite and definite integration on univariate functions.
- Develop proficiency in performing fundamental matrix operations (addition, multiplication, transpose, adjoint, inverse, determinants), and computing characteristic polynomials, eigenvalues, and eigenvectors.
- Educate students on solving first-order first-degree ODEs and second-order homogeneous ODEs using symbolic computation in wxMaxima.
- Enable students to compute gradient, divergence, and curl of vector fields and verify fundamental vector calculus identities.
- Enhance students' ability to generate 2D and 3D plots of functions, equations, and parametric curves using wxMaxima's built-in plotting capabilities.

Course Learning Outcomes: After completion of the course:

- Students will efficiently navigate wxMaxima's interface, menus, built-in constants, variables, and library functions to perform symbolic and numerical computations.
- Students will be able to simplify, factorize, and solve linear equations, systems of linear equations, and polynomial equations using wxMaxima.
- Students will compute limits, determine left-hand and right-hand limits at discontinuities, and apply Taylor series expansions to approximate functions.
- Students will find derivatives, higher-order derivatives, and partial derivatives, as well as perform both definite and indefinite integrals of functions.

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- Students will perform matrix operations (addition, multiplication, transpose, adjoint, inverse, determinant) and compute characteristic polynomials, eigenvalues, and eigenvectors.
- Students will solve first-order and second-order homogeneous ODEs using symbolic computational techniques in wxMaxima.
- Students will compute gradients, divergences, and curls of vector fields and verify fundamental vector calculus identities.
- Students will generate 2D and 3D plots of functions, equations, and parametric curves using wxMaxima's built-in plotting capabilities.
- Students will utilize mathematical techniques to model and solve practical problems in algebra, calculus, and differential equations.
- Students will gain confidence in using symbolic computation tools to analyze mathematical structures and derive solutions effectively.

Course Contents

Sr. No.	Practical
1	Introduction to the user interface, various menu, inbuilt constants, variables and library functions.
2	a) Simplify or factorize a given mathematical expression in symbolic form. b) Solve the given linear equations, system of linear equations and polynomial equations.
3	a) Find limit of given functions. b) Find left hand limit and right-hand limit at a point of a discontinuity of a function. c) Find the Taylor series expansions of a given functions.
4	a) Find derivative and higher order derivatives and partial derivatives of given functions. b) Find indefinite and definite integrals of given univariate functions.
5	Perform basic computations for matrices (addition, multiplication, transpose, adjoint, inverse, determinants, etc..)
6	a) Find Characteristic Polynomial of a given square matrix. b) Find Eigen Values and Eigen Vectors of a given square matrix.

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7	Solve first order first degree ODEs.
8	Solving a Second-Order Homogeneous ODE
9	(a) Find the gradient of the given scalar functions. (b) Find the divergence and curl for the given vector fields. (c) Verify that the divergence of the curl of a vector field is always zero.
10	Generate 2D and 3D plots of functions, equations, and parametric curves using wxMaxima's built-in plotting capabilities. (a) Plot $f(x) = x^3 - 2x + 1$ in 2D. (b) Plot 3D surface $f(x, y) = \sin(x) \cos(y)$.

Suggested References:

1. David J. Stoutemyer, **wxMaxima Tutorial**. CreateSpace Independent Publishing Platform, 2nd edition, 2017.
2. David Eck, **wxMaxima User's Guide**, Hobart and William Smith Colleges, Eastern Economy Edition, 4th edition, 2019.

Suggested E-learning:

1. Visit <https://onlinecourses.nptel.ac.in> for suitable course.

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INTERNAL EVALUATION SCHEME		
NO	Particulars	Marks
1	Mid Semester Exam/ Practical Exam (Mandatory)	13
2	Class Test	03
3	Open book exam/test	03
4	Open note exam/test	03
5	Self-test/ Online test	03
6	Essay/Article writing	03
7	Quizzes/Objective test	03
8	Class assignment	03
9	Home assignment	03
10	Reports Writing	03
11	Research/Dissertation	03
12	Case Studies	03
13	Viva/Oral exam	03
14	Group Discussion	03
15	Role Play	03
16	Paper presentation/Seminar	03
17	Language Lab work	03
18	Interview	03
19	Craft work	03
20	Co-curricular work	03
21	Field Assignment	03
22	Poster Presentation	03
23	Attendance	03
24	Project Work	03
	Total	25

Note: Sr.No.1 is mandatory. Select any Four from Sr.No.2 to 24.

Each Contains three marks. Student should secure 09 Marks for passing in internal Exam.

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Format of Question Paper for Internal & External Examination

for

SEC - 5 (Skill Enhancement Course-5)

Evaluation of 50 Marks (2 Credit Paper)

Continuous and Comprehensive Evaluation (CCE)-Formative- 25 Marks	Semester End Evaluation (SEE)- Summative-25 Marks
<u>Practical's (25 Marks)</u> 1. Performance 15 Marks 2. Viva-voce 10 Marks Total 25 Marks	<u>Practical's (25 Marks)</u> 1. Performance 15 Marks 2. Viva-voce 05 Marks 3. Journal 05 Marks Total 25 Marks

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Course Level	5.5		Internal Marks	25
Programme	U.G.		External Marks	25
Semester	5		Practical Internal	-
Course Type	Skill Enhancement Course-5		Practical External	-
Course Credit	02		Prac.Ext.Exam Time	-
Teaching Hours	30		Total	50
Course Code			Exam Duration	1 Hour
Course Title	Writing Skills for Science Students			

Course Description:

- As science students have learnt grammar skills and conversational skills in the previous skill enhancement courses, this paper brings writing skills in focus. Science field has long history of record keeping and journaling in written mode.
- This paper is designed to hon writing skills of the students which can help them in further studies as well in future careers. This paper includes scientific, technical, comprehensive, creative and visual writing. The assessment pattern focuses on written pieces by students in the final examination.

Course Objectives:

- To expose students to various writing skills pertaining to science field.
- To acquaint students with various modes of writing.
- To develop independency in students for writing short pieces in English.
- To develop preparedness for current employment environment.

Course Learning Outcomes: After completion of the course:

- Students will be able to identify various writing skills pertaining to science field.
- Students will be able to comprehend various modes of writing.
- Students will be able to draft short pieces in English.
- Students will be able to tackle writing tasks prevalent in current employment environment.

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Course Contents

Sem	Unit No.	Syllabi	Teaching Hours
5	1	1. Five-point summarization (Students will learn to write summary of a paragraph in five bullet points.) 2. Technical writing (Students will learn to write a short piece technically on a laboratory instrument or a process in given format.) 3. Scientific writing (Students will write a short piece of scientific writing using IMRaD format.)	20
	2	1. Reflective writing based on a thought (Students will learn to write paragraphs based on a thought or idea given to them using creative and analytical writing skills.) 2. Poster writing (Students will write a visual draft of poster based on given topics.)	10
List of prescribed topics for 1.2, 1.3, 2.1 & 2.2 has been given, examiners will select topics from the list for the above-mentioned writing skills.			

Suggested Reading:

1. Clark, Peter. *Writing Tools*. Litte, Brown Spark, 2008
2. Edwards, Julian. *Write Reflectively*. SAGE Publication, 2023
3. Paul, D. S. *Advanced Writing Skills*. Goodwill Publishing House, 2022
4. Gairns, Ruth. *Oxford Word Skills*. Oxford University Press, 2012

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List of prescribed topics:

Unit	Writing skill	Topics prescribed
1	Five-point summarization	An unseen paragraph will be asked
	Technical writing	• How to Use a Digital Thermometer • How to Use a Microscope • How to Clean Laboratory Glassware • How to Store Chemicals Safely in a Lab • How to Prepare a Slide for Microscopic Observation (Format of technical writing will include Title, Objectives, Materials needed or Steps of procedure.)
	Scientific writing	• Effect of Temperature on Dissolving Sugar • How Light Affects Plant Growth • Effect of Salt on Boiling Point of Water • Simple Pendulum: Measuring Time Period • Testing Acidity and Basicity Using Litmus Paper (Format of scientific writing will include Introduction, Method, Results and Discussion.)
2	Reflective writing based on a thought	• Not all those who wander are lost • True wealth is not measured in money or possessions • You don't need a reason to help people • Dreams are today's answers to tomorrow's questions • Change begins at the end of your comfort zone (Format of reflective writing will be simple paragraphs on the topic.)
	Poster writing	• Say No to Plastic • Stop Cyberbullying • Road Safety: Follow Traffic Rules • My Dream City • Plant Trees, Save the Planet (Format of poster writing will be a full-page rough draft of a poster with visuals.)

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INTERNAL EVALUATION SCHEME		
NO	Particulars	Marks
1	Mid Semester Exam (Mandatory)	13
Moreover, any four components from the following can be selected for internal evaluation of students:		
2	Class Test	03
3	Open book exam/test	03
4	Open note exam/test	03
5	Self-test/ Online test	03
6	Essay/Article writing	03
7	Quizzes/Objective test	03
8	Class assignment	03
9	Home assignment	03
10	Reports Writing	03
11	Research/Dissertation	03
12	Case Studies	03
13	Viva/Oral exam	03
14	Group Discussion	03
15	Role Play	03
16	Paper presentation/Seminar	03
17	Language Lab work	03
18	Interview	03
19	Craft work	03
20	Co-curricular work	03
21	Field Assignment	03
22	Poster Presentation	03
23	Attendance	03
24	Project Work	03
Total		25

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Paper Style

Ques. No.	Particulars	Unit	Marks
1	Attempt a five-point summarization of the given paragraph.	1	5
2	Write a technical note on one of the following topics. (Any one of the two)		5
3	Write a scientific note on one of the following topics in IMRaD format. (Any one of the two)		5
4	Write a reflective paragraph on a thought from list given below. (any one of the two)	2	5
5	Write a visual draft of a poster from the topics given below. (any one of the two)		5
	Total Marks		25

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Course Level	U.G. (5.5)	Internal Marks	0
Programme	B.Sc	External Marks	0
Semester	V	Practical Internal	25
Category of Course	Skill Enhancement Course	Practical External	25
Course Credit	2	Prac. External Exam Duration	2 hours
Teaching Hours	60	Total	50
Course Code	SECPHY511 (P)	Exam Duration	
Course Title	Electronics and Instrumentation		

Course Objectives:

- The course aims to enable students to design, construct, and analyse basic logic gates (AND, OR) on a breadboard, understand function generators for analog and digital signals, and implement and verify low-pass and high-pass filters on PCBs. Additionally, students will learn spectrometer operation, prism deviation measurements, Arduino UNO basics, and differentiate between microprocessors and microcontrollers through hands-on experimentation and theoretical understanding.

Course Learning Outcomes: Upon completion of the course, students should be able to:

- Understand and implement basic logic gates (AND, OR) using breadboards.
- Operate analog and digital function generators for signal generation.
- Use a spectrometer to measure the least count and determine prism deviation angles.
- Align optical instruments (collimator, telescope) using Schuster's method.
- Explore Arduino UNO features, pin configurations, and applications.
- **Differentiate** between microprocessors and microcontrollers in terms of architecture and functionality.

Course Contents:

Unit No.	Syllabi	Teaching Hours
List of Experiments	1. Design, construct, and analyse AND logic gate on a breadboard. 2. Design, construct, and analyse an OR logic gate on a breadboard. 3. To use an analog and digital function generator for different physical quantities. 4. To construct and verify a low-pass filter on PCB. 5. To construct and verify a high-pass filter on PCB.	30

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	6. To determine the least count of the spectrometer. 7. To adjust the collimator and the telescope for parallel rays using Schuster's method. 8. To determine the angle of minimum deviation for a given prism using a spectrometer. 9. To study the basic features, pin configuration, and working of the Arduino UNO board. 10. To understand the basic architecture, functioning, and difference between a microprocessor and a microcontroller.	
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Suggested Reading:

Text Books:

1. Electronic Components and Materials by S.M.Dhir, Publisher: Tata McGraw-Hill
2. Printed circuit boards: design and technology by W.C. Bosshart, Publisher: Tata McGraw-Hill

Reference Books:

1. Electronics Project for Beginners, by A.K.Maini, Publishers: Pustak Mahal Electrical Drawing by J.B.Gupta