SALDIHA COLLEGE

[B⁺ NAAC Accredited) 2nd Cycle)]

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Ref. No.................   Date..15..03..2025

Notice

Department of Chemistry is going to conduct an ADD ON COURSE on **A MS Office, Origin Lab, ChemDraw: Integration to AI Tools** from 28th March 2025 to 30th May 2025.

Topic of Interest: Microsoft Office, Origin Lab and ChemDraw

Objective: For chemistry students, Microsoft Office, ChemDraw and Origin Lab aims to facilitate documentation, data analysis, and presentation skills, enabling them to organize, analyze, and share chemical data and research findings effectively. Integrating AI tools like Copilot aims to enhance productivity and streamline workflows in apps like Word, Excel, PowerPoint, and Outlook, offering features like writing assistance, data analysis, presentation creation, and meeting summarization.

Teaching Pedagogy

- Flipped classroom teaching blackboard and ICT tools
- Classroom teaching through LCD projector
- Practice work on computer system
- Continuous student evaluation through assignment

Duration: 45 hours

Session: March 2025 to May 2025

Assessment and Evaluation

Student will be evaluated through the final examination at the end of the course. Certificate will be issued based on performance.

Conducted by: Department of Chemistry

Instructors: Dr. Dipak Kumar Rana
Dr. Samir Kumar Mandal
Dr. Manash Kumar Manna
Dr. Sudeshna Saha

Outcomes of the Add-on-Course: After the course, students will be skilled enough to write a project with proper format including chemical structures, tables, figures and referencing. This will help them for their future academic and professional development.

HOD
Department of Chemistry
Saldiha College

Head of the Department of Chemistry
Saldiha College
Saldiha, Bankura

Principal
Saldiha College
Saldiha, Bankura
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Saldiha College
Saldiha, Bankura

Aims

- ### Word (Document Creation and Organization):

Report Writing:
Students can use Word to create reports, lab manuals, and other academic documents with proper formatting, tables, and figures.

Chemical Structures:
The Chemistry Add-in for Word allows for the easy insertion and modification of chemical information, including formulas and 2D depictions.

Text Editing and Formatting:
Word's features, like spell check, grammar check, and advanced formatting options, are essential for creating polished, professional-looking documents.

- ### Excel (Data Analysis and Graphing):

Data Entry and Organization:
Excel can be used to organize experimental data, allowing students to easily sort, filter, and analyze the information.

Calculations and Formulas:
Students can perform calculations, use functions, and create graphs to visualize data and understand relationships.

Statistical Analysis:
Excel can be used for basic statistical analysis, such as finding averages, standard deviations, and creating regression plots.

- ### PowerPoint (Presentations and Visual Communication):

Creating Slides:
Students can use PowerPoint to create engaging presentations to share their research findings, lab results, and other information.

Visualizations:
PowerPoint allows for the creation of diagrams, charts, and other visuals to enhance the clarity and impact of presentations.

- **Access (Database Management):**

Database Creation:
Access can be used to create databases for organizing and managing chemical data, such as reaction products, compounds, and experimental conditions.

Data Queries and Reports:
Students can use queries and reports to extract specific information from the database and create summaries.

In essence, Microsoft Office empowers chemistry students by providing a suite of tools to enhance their academic work, from creating reports and organizing data to presenting research findings effectively.

Objectives

Objective of Microsoft Word
To gain proficiency in creating, editing, formatting, and managing text-based documents for various academic and professional purposes.

Objective of MS PowerPoint
To enhance presentation skills, organize and present information effectively, and collaborate on projects, ultimately improving communication and engagement.

Objective of ChemDraw
To provide a platform for visually representing and manipulating chemical structures and reactions, fostering better understanding and communication of scientific concepts.

Objective of Excel
To gain essential spreadsheet skills for managing, analyzing, and visualizing data, which can be used in various academic and professional settings, including data analysis, budgeting, and financial modeling.

Objective of Origin Lab
To gain proficiency in data analysis and graphing software of choice.

Objective of Microsoft 365

Microsoft 365 has AI-powered features. Its Copilot AI assistant, which integrates with apps like Word, Excel, PowerPoint, and Outlook, offering real-time intelligent assistance for tasks like writing, data analysis, and presentation creation.

SALDIHA COLLEGE
Department: Chemistry

Add on Course on Useful Software: Learning and Its Applications

MS OFFICE WORD		
	Particulars	**Duration**

Lecture 1	1. **MS Word Basics**
	  a. Creating new file: creation, save, directory
	  b. Copy, cut, paste
	  c. Front Setting
	  d. Paragraph setting
	  e. Styles
	2. **Layout**
	  a. Page Setup
	  b. Paragraph
	  c. Table: Row, Column, Cell, Split
	  d. Alignment
	  e. Data
		1h

Lab 1	**Based on Lecture 1**	**1h**

Lecture 2	3. **Insert**
	  a. Page: Blank, cover, break
	  b. Table
	  c. Shape, picture, chart, art
	  d. Link and Comments
	  e. Header and footer
	  f. Text
	  g. Equation and symbol
	4. **Design**
	  a. Page Background
	  b. Documents
	  c. Table: Style and Boarder
		1h

Lab 2	**Based on 2**	**1h**

Lecture 3	5. **References**
	  a. Table of Content
	  b. Footnotes
	  c. Citation and Bibliography
	  d. Captions
	  e. Index
	  f. Table of Authority
	6. **Mailings (MS Office 2021)**
	  a. Create
	  b. Start Mail Merge
	  c. Write and Insert Field
	  d. Review Result
	  e. Finish
		1h

Lab 3	Based on Lecture 3	1h

Lecture 4	7. **Review (MS Office 2021)**
	  a. Proofing
	  b. Language
	  c. Text to Speech
	  d. Tracking
	  e. Protect
	8. **View (MS Office 2021)**
	  a. Views: Layout
	  b. Page Movement
	  c. Zoom
	  d. Window
	Integration of AI
		1h

Lab 4	Based on Lecture 4	1h

Project	9. **Application Format**
	  a. Letter Writing
	  b. Application to an authority
	  c. Summary writing
	  d. Dialogue writing
	  e. Project
		2h

	Assessment	

MICROSOFT OFFICE POWER POINT

	Particulars	Duration

Lecture 1	1. **PowerPoint Basics**
	  a. Creating New Slide: Creation, Save, Directory
	  b. Copy, Cut, Paste
	  c. Front Setting
	  d. Styles
	  e. Delete Slide
	2. **Insert**
	  a. Page: Blank, cover, break
	  b. Table
	  c. Shape, chart, art
	  d. Text
	  e. Date & Time
	  f. Slide Number
	  g. Symbol
	  h. Picture
	  i. Video
	  j. Sound
		1h

Lab 1	**Based on Lecture 1**	**2h**

Lecture 2	3. **Design**
	   a. Page Background
	   b. Slide Design
	   c. Table: Style and Boarder
	4. Animation
	5. Slide Show
		1h

Lab 2	**Based on Lecture 2**	**2h**
Project	6. **Application: Integration of AI**	**2h**
	Assessment	

GRAPH PLOTTING: ORIGIN LAB		
	Particulars	**Duration**

Lecture 1	1. **Origin Basics**
	   a. Creating New Column: Creation, Save, Directory
	   b. Add Column
	   c. Copy, Cut, Paste
	   d. Front Setting
	   e. Styles
	   f. Delete Column
	   g. Column value
		1h

Lab 1	**Based on Lecture 1**	**1h**

Lecture 1	2. **Plot**
	   a. Line
	   b. Symbol
	   c. Line + Symbol
	   d. Multi-line
	3. **Analysis**
		1h

Lab 2	**Based on Lecture 2**	**2h**
Excel		
Lecture 3	4. **Plotting of Graph using Excel**	**1h**
Lab 3	**Based on Lecture 3**	**2h**
	Project	

MICROSOFT EXCEL		
Particulars		**Duration**

Lecture 1	**1. Microsoft Excel Fundamentals**
	    a. Launching Excel
	    b. TIP- Hide Excel Ribbon
	    c. TIP – Customizing the Excel Quick Access Toolbar
	    d. More on the Excel Interface (Workbook and Status Bar)
	    e. Understanding the Structure of an Excel Workbook
	    f. Saving an Excel Document
	    g. Opening an Existing Excel Document
	    h. Common Excel shortcut Keys
	    i. Excel Fundamental Quiz
		1h

Lecture 2	**2. Entering and Editing Text and Formulas**
	    a. Entering Text to create Excel Spreadsheet Titles
	    b. Working with Numeric Data in Excel
	    c. Entering Date Values in Excel
	    d. Working with cell References
	    e. Creating Basic Formulas in Excel
	    f. Relative Versus Absolute Cell References in Formulas
	    g. Understanding the Order of Operation (Download Exercise File)
	    h. Entering and Editing Text and Formulas Quiz
		1h

Lab 1	**Based on Lecture 1 and 2**	**1h**

Lecture 3	**3. Working with Basic Excel Functions**
	    a. The structure of an Excel Function
	    b. Working with the SUM() Function
	    c. Working with the AVERAGE() Function
	    d. Working with the COUNT () Function
	    e. Adjacent Cells Error In Excel Calculations
	    f. Using the AutoSum Command
	    g. Excel AutoSum Shortcut Key
	    h. Using the AutoFill Command to Copy Formulas
	    i. Basic Excel Functions Quiz
		1h

Lecture 4	**4. Modifying an Excel Worksheet**
	    a. Moving and Copying Data in an Excel Worksheet
	    b. Inserting and Deleting Rows and Columns
	    c. Changing the Width and Hight of Cells
	    d. Hiding and Unhiding Excel Rows and Columns
	    e. Renaming an Excel Worksheet
	    f. Moving and copying an Excel Worksheet
	    g. Modifying Worksheets Quiz
		1h

Lab 2	**Based on Lecture 3 and 4**	**1h**

Lecture 5	**5. Formatting Data in an Excel Worksheet**
	    a. Working with Font Formatting Commands
	    b. Changing the Background Colour of a Cell
	    c. Adding Borders to Cells
	    d. Excel Cell Borders Continued
		1h

	e. Formatting Data as Currency Values
	f. Formatting Percentages
	g. Using Excel Format Painter
	h. Creating Styles to Format Data
	i. Merging and Centering Cells
	j. Using Conditional Formatting
	k. Editing Excel Conditional Formatting
	l. Formatting Data Quiz
	6. Inserting Images and Shapes into an Excel Worksheet
	   a. Inserting Images
	   b. Inserting Excel Shapes
	   c. Formatting Excel Shapes
	   d. Working with Excel SmartArt	

Lab 3	**Based on Lecture 5**	1h

Lecture 6	**7. Creating Basic Charts in Excel**
	   a. Creating an Excel Column Chart
	   b. Working with the Excel Chart Ribbon
	   c. Adding and Modifying Data on an Excel Chart
	   d. Formatting an Excel Chart
	   e. Moving a Chart to another Worksheet
	   f. Working with Excel Pi Charts
	   g. Microsoft Excel Chart Quick Guide (DOWNLOAD)
	   h. Working with Excel Chart Quiz
	8. Printing an Excel Worksheet
	   a. Viewing your Document in Print Preview
	   b. Changing the Margins, Scaling and Orientation
	   c. Excel Worksheet Margins
	   d. Working with page Layout view
	   e. Adding Header and Footer Content
	   f. Printing a Specific Range of Cells
	   g. Printing an Excel Worksheet Quiz
	Integration of AI
		1h

Lab 4	**Based on Lecture 6**	1h
	Application: Integration of AI	

CHEMDRAW SOFTWARE		
Particulars		**Duration**

Lecture 1	1. Basics introduction to ChemDraw
	2. Use of different toolbars
	3. Drawing of structure of molecules
	
	  a) Drawing of hydrocarbons
	  b) Drawing of molecules containing heteroatom
	  c) Subscript and Superscript of numbers and letters
	  d) Drawing of molecules containing multiple bonds
	  e) Drawing of cyclic& polycyclic compound using
		1h

	templates	
	f) Drawing of substituted cyclohexane in chair form g) Drawing of reaction intermediates& ionic compounds 4. Checking the correctness of the structure drawn 5. Clean up the drawn structure for perfect bond orientation 6. Changing colour of the drawn structure as per requirement	
Lab 1	**Based on Lecture 1**	**1h**

Lecture 2	7. Drawing of molecules bearing chiral centers
	8. Drawing molecules using templates
	     a) Drawing of molecules in different projections
	     b) Drawing the structure of different cyclic conformers
	     c) Drawing of inorganic/organometallic compounds
	     d) Drawing of amino acids
	     e) Drawing of polyaromatic compounds
	     f) Drawing of bicyclic compounds
	     g) Drawing of macrocyclic compounds
	     h) Drawing of nucleobases, nucleosides, nucleotides
	     i) Drawing of hexoses
	     j) Drawing of metallocenes
	     k) Drawing of supramolecules
		1h

Lab 2	**Based on Lecture 2**	**1h**
Lecture 3	1. Drawing of molecular orbital picture 2. Drawing of laboratory apparatus setup 3. Convert the structure to IUPAC name and its vice versa 4. Find the molecular weight and chemical formula 5. Prediction of physical properties (melting point, boiling point etc.) 6. Drawing of reaction scheme 7. Alignment of structures 8. Drawing of reaction mechanism 9. Drawing of catalytic cycle	**1h**
Lab 3	**Based on Lecture 3**	**1h**
Lecture 4	1. Drawing of table 2. Drawing of TLC plate 3. Prediction of ^{1}H and ^{13}C NMR spectra and chemical shift values 4. Standard ChemDraw setting for different scientific organization 5. Save the structure in different formats	**1h**
Lecture 5	1. Convert the structure into 3D ball & stick model 2. Viewing molecules by rotating around different axis 3. Creation of animation of rotating molecular model 4. Export file in different format	**1h**
Lab 4	**Based on Lecture 4 and 5**	**1h**
	Assessment	