4th Semester Syllabus for Core Component Course in Chemistry, St. Xavier's College – Autonomous, Mumbai.

SYLLABUS UNDER AUTONOMY
CHEMISTRY (CROSS FACULTY)

SEMESTER IV **COURSE: SPC.4.01**

CHEMISTRY IN CONTEXT: APPLYING CHEMISTRY TO SOCIETY

[45 LECTURES]

LEARNING OBJECTIVES

Course Objectives

The goal of ***'Chemistry in Context'*** is to establish a relationship of chemical principles with significance to social, political, economic, and ethical issues. This introductory chemistry course for non-science majors explores the intersection of chemistry with everyday life.

The course includes topics such as nuclear energy and energy alternatives; health, food and nutrition, kitchen chemistry, plastics, chemicals in the environment, synthetics, and applications of chemistry to the visual arts.

- This course is intended for non-science students to

1. Develop an appreciation for the importance of the role of chemistry in everyday life.
2. Improve their ability to think critically and logically.
3. Make students more aware of the chemicals found in all aspects of daily life.
4. Become knowledgeable about the connection between chemistry and pollution, health care, energy, nutrition and life, and visual arts.
5. Apply knowledge of chemistry to improve quality of life.

UNIT I: History And Relevance Of Chemistry (15 L)

1.1: Life without Chemistry

1.1.1: Chemistry matters.

1.2: Chemistry of Life

1.2.1: Introduction.

1.2.2: Chemical basis of life, Periodic table, Elements in the human body, Essential, Non-essential elements, Criteria of essentiality.

1.3: Food Chemistry

1.3.1: Food processing-colouring and flavouring agents.

1.3.2: Food preservation-viscosity builders-bulking agents and artificial sweeteners.

1.3.3: Food additives and Food colours –permitted and non-permitted.

UNIT II: Chemistry In Everyday Life (15 L)
(Applications, Uses And Impact Of Chemistry)

2.1: Pharmaceuticals

2.1.1: Introduction.

2.1.2: Contribution of chemistry to human health and historical developments in medicine.

2.1.3: Classification of drugs and some common drugs used in our daily life.

2.2: Plastics and Polymers

2.2.1: Introduction to polymers, types of polymers.

2.2.2: Plastic in daily use: HDPE, LDPE, PVC, PET, PP. Environmental Hazards of plastics.

2.2.3: Recycling of plastics International universal recycling codes and symbols for identification.

2.2.4: Biodegradable plastics. Alternatives: Paper news print, writing paper, paper boards, cardboards and Natural materials: Wood, cotton, jute, coir.

2.3: Cosmetics

2.3.1: Basic concepts-composition and classification of creams-sunscreen and suntan lotions-deodorants, talcum powder- dentifiers, lipsticks, oils, face creams, toilet powder, skin products, dental cosmetics, hair dyes, shaving cream, shampoo.

2.4: Soaps and detergents

2.2.1: Soaps - Basic chemical compositions of soaps, Surface active agents, builders, additives, fillers and fragrance, toilet soap, bathing bars, washing soaps. Bio-degradability.

2.4.2: Detergents– Introduction, Detergent action, Significance of acidity and alkalinity.

2.4.3: Common detergent chemicals. Environmental hazards.

UNIT III: Impact Of Chemistry In Other Fields (15 L)

3.1: The Chemistry & Art Connection

3.1.1: The earliest use of colour

3.1.2: Use of colour to decorate the body and surroundings.

3.1.3: Relationship between light and colour

3.1.4: Electromagnetic Spectrum, Cause of colour in objects, Properties of Light. The Nature and Behavior of Light, Mixing Colors: Light vs. Pigments

3.1.5: Colorants: Pigments and Dyes.

3.1.6: Chemistry of art conservation and restoration, Fakes and Forgeries in art.

3.2: The Chemistry and Sports connection

3.2.1: Chemistry of sports materials

3.2.2: Use of performing enhancing drugs in sports.

Mode of Evaluation: (No end semester examination)
Poster Presentation/Model Making/Presentation/Assignment/ Crossword/MCQs

Maximum number of seats: 40

Template of Question Paper

CHEMISTRY IN CONTEXT: APPLYING CHEMISTRY TO SOCIETY
COURSE : SPC.4.01

OBJECTIVES

UNIT	KNOWLEDGE	UNDERSTANDING	APPLICATION	TOTAL MARKS
I	8	8	4	20
II	8	8	4	20
III	8	8	4	20
TOTAL MARKS PER OBJECTIVE	24	24	12	60
% WEIGHTAGE	40	40	20	100

ASSESSMENT GRID AS QUALITY MECHANISMS

St Xavier's College, Mumbai

ASSESSMENT OF POSTER PRESENTATION

Dept. of Chemistry Course Code _____ Date: _____

UID No. _____ Roll No. _____ Marks: _____/20

NAME OF STUDENT: _____

TITLE OF POSTER: _____

Assessment Grid: Place one tick in the appropriate box of a row. Each row should have at least one box ticked. In boxes that have more than one set of marks, cancel out the marks that are not applicable and circle the correct marks. Overall marks should reflect the total of marks in all ticked boxes. Figures in parentheses in each box indicate marks.

Poster: 50%

50%	PRESENTATION	80-100%	60-80%	40-60%	20-40%	0-20%
20% **(4)**	**Content** Summarisation of objectives of the concept, relevance to the concept	Excellent **(4)**	Good **(3)**	Average **(2)**	Poor **(1)**	Very Poor **(0.5)**
20% **(4)**	**Creativity** Choice of materials /accessories, props used for display	Excellent **(4)**	Good **(3)**	Average **(2)**	Poor **(1)**	Very Poor **(0.5)**
10% **(2)**	**Visual Impact** Appeal and Aesthetics	Excellent **(2)**	Good **(1.5)**	Average **(1)**	Poor **(0.5)**	Very Poor **(0)**

Individual Assessment: **20%**

20%	PRESENTATION	80-100%	60-80%	40-60%	20-40%	0-20%
10% (2)	**Presentation Skills**	Excellent (2)	Good (1.5)	Average (1)	Poor (0.5)	Very Poor (0)
10% (2)	**Ability to answer questions** Clarity of thought and confidence	Excellent (2)	Good (1.5)	Satisfactory (1)	Poor (0.5)	Very Poor (0)

Group Assessment: **30%**

30%	PRESENTATION	80-100%	60-80%	40-60%	20-40%	0-20%
15% **(3)**	**Knowledge and Understanding**	Excellent impression of wide reading, good knowledge and awareness **(3)**	Good **(2)**	Satisfactory **(1.5)**	Poor **(1)**	Very Poor **(0.5)**
15% **(3)**	**Content(Structure of presentation)** Key points/ Themes	Excellent **(3)**	Good **(2)**	Satisfactory **(1.5)**	Poor **(1)**	Very Poor **(0.5)**

TOTAL FOR POSTER: _____OUT OF 20 MARKS

COMMENTS :

NAME OF FACULTY MEMBER_____

SIGNATURE: _____

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