



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

1.3.2: COURSE CONTENT OF VALUE-ADDED COURSES FOR IMPARTING TRANSFERABLE AND LIFE SKILLS OFFERED DURING LAST FIVE YEARS

❖ 2019 - 2020

- Epigraphy and Numismatics
- History of Performing Arts & Theatre in Ancient India
- Maritime Heritage of Ancient India
- Brief study of the Comparative Mythology of the world
- Diploma in Ancient Indian Culture and Heritage
- Women Pioneers in Early World Cinema (Part I and II)
- Research Paper Writing and Presentation on Perception: In the eye of the beholder.
- Technical Analysis
- Open ended project based Plant propagation through various modes
- Antibacterial properties of silver nanaoparticles
- Applications of Chem-Draw: A tool in Chemistry
- Applications of MATH TYPE: An equation writing tool
- Application of LATEX: Software for publishing research articles in Chemistry.
- Research Project in Food and Environmental Chemistry
- Research Project in Inquiry based Practicals for Organic Chemistry
- Workshop: 'Chemistry in Context'
- Research Methodology and Analytical Techniques (Advanced)
- A survey of awareness, behaviour and level of sensitivity of students towards environmental issues among students of St. Xavier's College, Mumbai
- Global Climate Change and Social Justice
- From College to Corporate – A Soft skills course.
- Primary Market Research



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

- Applications of Distributions in Industry
- Diploma Course in Forensic Science

❖ 2018 - 2019

- Epigraphy and Numismatics
- History of Performing Arts & Theatre in Ancient India
- Maritime Heritage of Ancient India
- Brief study of the Comparative Mythology of the world
- Translation, Children's Literature and Travel Writing
- Research Paper Writing and Presentation on Individual and group differences: exploring and appreciating diversity
- Technical Analysis of Stocks
- Embryonic Tissue Culture: A Primer for Animal Cell Culture Techniques.
- Finding Hidden Messages in Biomolecules: Bioinformatics Approach
- Bioinformatics: Solution to the Biological Problems
- Morphology of fruits and vegetables
- Extraction of oils from botanical samples
- Open ended project based Phylogenetic tree of the chitinase enzyme present in various plants using FASTA code
- Conserving Artefacts: A Chemical View
- Research Project: Metal oxide semiconductors as effective photocatalyst: pros and cons
- Research Project: Complex Chemistry
- Research Project in Food and Environmental Chemistry
- Applications of Chem-Draw: A tool in Chemistry
- Research Methodology and Analytical Techniques (Basic)
- Research Methodology and Advanced Analytical Techniques
- Mapping the Microscopic Biodiversity of Sanjay Gandhi National Park, Mumbai
- Estradiol-mediated Development of Retina in Chick Embryo system



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

- Animal Tissue Culture
- Diploma Course in Forensic Science
- Evolution: the cornerstone of science
- Basic skills in wildlife filmmaking

❖ 2017 - 2018

- Study of Epigraphic and Numismatics of India: Certificate Course
- Mother Earth and her secrets of sustainability: QEP
- Research Paper Writing and Presentation on Psychological Review of Famous Persons, characters, events & trends
- Technical Analysis of Stocks
- Joy of self discovery and Cosmic Hug
- Sports Business Management.
- Finding Hidden Messages in Biomolecules: Bioinformatics Approach
- Primary Tissue Culture
- Morphology and identification of vegetables
- Digitisation of botanical specimen
- Open ended project Determining optimal pH for the synthesis of silver nano particles using black tea extract
- Chemistry in Art
- Research Methodology and Analytical Techniques (Basic)
- Research Methodology and Advanced Analytical Techniques
- Vertebrate embryonic development - creating a developmental atlas using whole mounts of Chick and Zebrafish embryos.
- Does estradiol regulate retinal development and neurogenesis?
- Mapping the Microscopic Biodiversity of Sanjay Gandhi National Park, Mumbai
- ROS studies in yeast
- Animal Tissue Culture
- Diploma Course in Forensic Science



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

- Introduction to BEES: (BEES stand for Behavioural, Ecological and Evolutionary Sciences)
- Ornithology and Herpetology

❖ 2016 - 2017

- Epigraphy and Numismatics
- History of Performing Arts & Theatre in Ancient India
- Maritime Heritage of Ancient India
- Brief study of the Comparative Mythology of the world
- Research Paper Writing and Presentation on Application of Psychology to current events/phenomena
- Hinduism and Buddhism
- Sports Business Management
- Permanent slides preparation.
- Open ended project
- Synthesis and Isolation of some Organic Compounds: An Analytical Approach
- Research Project in Pharmaceutical Chemistry
- Research Project in Food and Environmental Chemistry
- Estimation of Copper Extracted from an Ayurvedic Drug Tamra Bhasm by Various Analytical Techniques
- Research Methodology and Analytical Techniques (Basic)
- Neurogenesis and Differentiation in Chick retina
- Fluorescent studies of Oxidative Stress
- Life in a Drop – II
- Nutritional Assessment of Students of St. Xavier's College, Mumbai
- Animal Tissue Culture
- . Diploma Course in Forensic Science
- Introduction to Bioinformatics



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

❖ 2015 - 2016

- Epigraphy and Numismatics
- History of Performing Arts & Theatre in Ancient India
- Maritime Heritage of Ancient India
- Research Paper Writing and Presentation on Learning & Memory
- Joy of Self Discovery
- Awaken to Cosmic Compassion
- Partners for Urban Knowledge and Research (PUKAR)
- Bio-synthesis of Silver Nanoparticles and Study of their Size Selectivity and Stability with Different Capping Agents.
- Development and Validation of an Antimicrobial Agent/S from a Combined Pharmaceutical Drug Formulation using Spectrophotometry
- Open ended experiment
- Screening of Natural Sources for Inhibition of Biofilm formation
- Use of Fluorescence Microscopy to Study Reactive Oxygen Species (ROS) Stress in Ethanol Producing Yeast
- Hypoxia and Reproductive fitness in Daphnia
- A study of the effects of Stress on Chironomus larvae
- Animal Tissue Culture
- Diploma Course in Forensic Science
- Basic astrobiology: is there life elsewhere in the universe?
- DNA damage and repair
- Ornithology and Herpetology



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

**5, Mahapalika Marg, Mumbai - 400 001,
INDIA.**

☎ 2262 0661/65

2019 - 2020



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

STUDY OF EPIGRAPHY AND NUMISMATICS OF INDIA

○ **Objective:**

- This is a course deals with development of the study of scripts and coinage in ancient India which enable a student to utilise the sources to reconstruct the past. The course will be dealt with the help of Literary, Archaeological, Numismatic and Epigraphic evidences for a holistic view of the facets of Indian culture.

○ **Content:**

- Introduction to Epigraphy
 - Aims, scope and definition of epigraphy
 - Origin and development of different scripts with special reference to Indus script, Brahmi, Kharoshthi
 - Indian eras (Shaka, Vikrama, Gupta, Chedi-Kalchuri)
- Ancient Indian Scripts
 - Brahmi
 - Kharoshthi
 - Persian
 - Introduction to post-ancient scripts for referencing and development of these ancient Indian scripts
- Introduction to Numismatics
 - Aims, scope and definition of numismatics
 - Medium of exchange
 - Techniques of manufacturing
- Coinage
 - Janapada (PMC & EUCC), Indo-Greek-Parthian- Scythian
 - Western Ksatrapas, Kushan, Satavahana, Tribal coins
 - Gupta, Pallavas, Chola and Cheras
 - Delhi Sultanate and Greater Mughal Coins

Bibliography:

1. Allan, J. 1935. Catalogue of Coins of Ancient India. London: British Museum.
2. Allchin, F.R. and K.R. Norman. 1985. "Guide to the Ashokan Inscriptions". South Asian Studies.

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

3. Altekar, A.S. 1957. Coinage of the Gupta Empire. Varanasi: Numismatic Society of India.
 4. Epigraphia Indica Vols. I-X.
 5. Gupta, P.L. 1979. (2nd Revised Edition) Coins. New Delhi: National Book Trust.
 6. Gupta, P.L. 1981. Coins: Source of Indian History. Ahmedabad: B.J. Institute of Learning and Research.
 7. Hultzch.D. 1969. (Reprint) Corpus Inscriptionum Indicarum Vol.I, Varanasi: Indological Book House.
 8. Mangalam, S.J. 1990. Kharoshthi Script. Delhi: Eastern Book Linkers.
 9. Pandey, R. 1957. Indian Palaeography. Delhi: Motilal Banarsidas.
 10. Rajor, Dilip 2001. Punch-marked Coins of Early Historical India. California. Resha Books International.
 11. Sircar, D.C. 1965. Indian Epigraphy. Delhi: Motilal Banarsidas.
 12. Sircar, D.C. 1986. (3rd edition) Select Inscriptions. Vol.I, Delhi: Asian Humanities Press.
- *****



Certificate Course

Alinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

HISTORY OF PERFORMING ARTS AND THEATRE IN INDIA

○ **Objective:**

- In an endeavour to further the holistic understanding of Ancient Indian Culture in all the parameters the attempt of this Paper aims to provide a sound grounding in understanding the nuances of performing arts. Focus, will be on the theoretical understanding and the relevance of the same in the realm of studying the essence of Ancient Indian culture. Whether they are sculptures, Art, Architecture, or Paintings, performing arts (Music and Dance traditions) is an innate part of the same. The attempt of this course is to enlighten the student to this synergy between fluid and static arts, this way broadens their horizon and innate understanding of the subject Ancient Indian Culture.

○ **Content:**

- **Sources for tracing the development of Performing arts in Ancient India**
 - Literary Sources: - Specific Study of Natyashastra , Abhinaya Darpana, Vishnu Dharmottra Purana with reference to the Origin and the development of the arts.
 - Document and study the references of Performing arts in the Literary Works of Sacred and Secular.
 - Contribution of Epics, in documenting the development of Performing arts.
 - Study the development of Archaeological sources in documenting the development of performing arts. Specific references, to Brihadeeshwara temple, Chidambaram, Sun Temple in Konark, Ramappa Temple in Warangal. Study the development of the same in the context to Paintings, both Frescoes and Murals.
- **Music**
 - Understanding the elements of Music- Nad, Shruti, Swara, Saptak.
 - Studying the Structure of a Raga- Genesis- Tat, Jati, Vadi, Samvadi, Varjit Swara, Samay Chakra, The importance of Tala (Both Carnatic and Hindustani). A brief idea of the concept and constituents of Khyal and Gath in Instrumental music.

Certificate Course

Alvindo

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.


Department of Ancient Indian History, Culture and Archaeology

- A study of the basic features and Structure of Gharanas (Hindustani Music) in Khyal Gayaki. Contribution and life history of famous musicians of the Gharanas.
- A study of the basic features of Carnatic Music. The forms of Kirtana, Kreethi , Javali. A study of the life history and contribution of the Trinity to Carnatic music.
- Forms and styles of Vocal performances:-
 - Dhruvad, Dhamar , Khyal, Tarana, Tappa, Thumri, Dadra, Hori
- Classification and study the contribution of Instrumental music In India.
- Material and Technology of musical instruments
- **Dance**
 - The Study of the elements and structure of Dance.:-
 - The concept of Nrta, Nrithya and Natya.
 - Study of Abhinaya- Angika, Vachika, Aharaya and Sattvika.
 - The study of Vrittis
 - Construction of a stage.
 - The study of Rasa and Bhava. :-
 - The Nayak and Nayika bhed
 - The understanding of Natyadharmi and Lokadharmi
 - Thandav and Lasya styles of performances
 - Study of the famous classical dances of India and study the life history of famous dancers and their dance schools with their contribution.
 - Study the famous folk dances from the States of India and their contribution.
 - Garba, Lavani, Kollatam. Lezium, Lambada, Dhimsa, Siddhi, Bihui, Pulikali, Koli dance, Kavadi, Ghumar, Burrakatha, Jatra
 - Material and Technology of costumes and props Material and Technology of the tangible aspects of folk art
- **Traditional Indian Theatre**
 - The development of Tradition Indian Theatre

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

- Kutiyattam, Yakshanagana, Bhagvatamela natakam, Bhavai, Yatra, Tamasa, Chau
- Traditional Indian Puppetry.
- A critical study of the situation of performing arts today. Their contribution.
 - Media
 - Music and Dance universities and degrees
 - Popular culture- Role of Cinema, College festivals, Organizations and sabha
- **Bibliography:**
 1. Vatsyayan Kapila (1968) Classical Indian Dance in Literature and the Arts, Sageet Natak akademi
 2. Nair Rajeev (2007) A Rasika's journey Through Hindustani Music, Indialog publications pvt ltd
 3. Rao Appa P.S.R and Sastry Rama P (1997) Bharata's Natya Shastra, A naatya mala publication
 4. Coomaraswamy Ananda, (1987) A mirror of Gesture, Munshiram Manoharlal Publishers pvt ltd
 5. Coomaraswamy Ananda (1987) Dance Of Shiva, Munshiram Ma noharlal Publishers pvt ltd
 6. Rangacharya Adya (1971) The Indian Theatre, National Book Trust of India
 7. Kishore B.R (Dr) (1988) Dances of India, Diamond Pocket Books
 8. Rao Krishna U.S (1980) A Dictionary of Bharata Natya, Orient Longman publication
 9. Sarabhai Mrilani (1981) Understanding Bhararatanatyam , Ther Darpana Academy of Performing arts
 10. Tarlekar G.H, (1975) Studies in the Natya Shastra, Motilal Banarsidass publication.
 11. Gosh Manmohan (1975) Nandikesvara Abhinayadarpanam, Manisha Granthalaya Pvt limited
 12. Bagchee Sandeep (1992) Nad Understanding Raga Music, Business Publication Pvt ltd

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

13. Sangeetha Natya Kala Sanhrama (1985) Kal;asadan publication Mumbai.
 14. Subrahmanyam Padma.Dr (1979) Bharatas art then and now, Nrithyodaya, Madras
 15. Subrahmanyam Padma .Dr (2003) Karanas Common Dance codes of India and Indonesia, Nrithyodaya Chennai
 16. Sawra Bharati, (2011) Dance and Dance Traditions , Bharatiya Vidya Bhavan publication
 17. Bhatkande Sangeet Shastra- Hatras publication (5 volumes)
 18. Classical Dances in India- Bharatiya Vidya Bhavan Publication
 19. Swara Bharati (2011) Dance and Dance traditions- Bharitya Vidya Bhavan
 20. Sangeet Visharad- Hatras Publication.
-

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

Maritime Heritage of Ancient India

○ Objectives:

- This course is recommended to understand the maritime tradition which existed in India from the proto-historic period. This course will help understand the impact of this traditional heritage on the cultural history of India.

○ Content:

• **Introduction to Indian Maritime Trade**

- Sources (Literary ,Oral, Archaeological)
- Trade Routes (Land and sea)
- Satavahanas and Trade Guilds

• **Maritime Trade in early India**

- Ports and Ship yards and types of ship on the western and the eastern coast of India. (Marine archaeology)
- Blue Water trade
- White Water Trade
- Introduction to marine archaeological conservation

• **River Economy**

- Trading centers and merchant guilds.
- Trade and river system in Northern and central India.
- Trade and river system in Deccan and South India.

• **Trade In Early Medieval Period**

- Trade with South and South East Asia.
- East Asian Trade
- Early European Trade

○ Bibliography:

1. Begley, Vimala and Richard Daniel de Puma, 1992, Rome and India: The Ancient Sea Trade. Delhi
2. Begley, Vimala, 1996, The Ancient Port of Arikamedu- New Excavation and researches 1989-1992- Pondicherry.
3. Boussac, Marie- Francoise and Jean Francois Salles, 1995: Essays on the Interrelations between India, Arabia and the Eastern Mediterranean, New Delhi.
4. Chakravarti Ranabir (ed) 2001, Trade in Early India. Oxford.

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

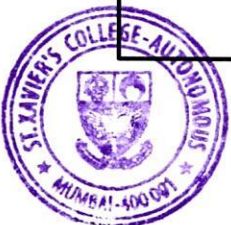
Department of Ancient Indian History, Culture and Archaeology

5. Chamoakalakshmi. R, 1996, Trade, Ideology and Urbanisation. Delhi.
 6. Chandra Moti, 1977, Trade and Trade Routes in Ancient India, New Delhi.
 7. Gogte, V.D.2000. Indo- Arabian Maritime Contacts during the Bronze Age: Scientific Study of pottery from Ras al-Junayz (Oman), Adumatu, Issue no.2 (July), 7-14.
 8. Jain V.K 1990, Trade and traders in western India, New Delhi.
 9. Lahiri Nayanjot, 1992, The Archaeology of India Trade Routes (up to 200B.C), Delhi.
 10. Liu Xinria,1988, Ancient India and Ancient China- Trade and Religious Exchanges, Delhi.
 11. Ray Himanshu Prabha, 2003, The Archaeology Of Seafaring in Ancient South Asia, Cambridge.
 12. Vohra N.N, (ed) 2002 India and East Asia Culture and Society, Delhi
- *****

Certificate Course

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

Brief study of the Comparative Mythology of the World.

○ Objectives:

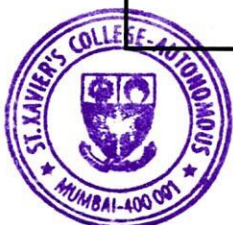
- Study of Mythologies of world civilizations.
- Understanding various classifications of myths.
- Comparative analysis of Indian and other world mythologies.

○ Content:

- Introduction to World Mythology
 - Introduction & Origin of the concept
 - Concept and Approaches for Comparative Mythology
 - Linguistic
 - Psychological
 - Structural
 - Historical and comparative
 - Phylogenetical
 - Creation and Regeneration Myths (20 lecs)
 - Creation of Universe & Mankind
 - Creative Sacrifice
 - Regeneration and Resurrection
 - Flood Myth
 - Cult of Deities, Heroes & Animals:
 - Mythical Heroes across the globe
 - Deities & Progenitors
 - Fertility Cult.
 - Broad category of animal & Hybrid animal myths across the globe
 - Space , After Life , Time and End of Times.
 - Mythological Sites & Spaces
 - Concept of After Life
 - Concept of Time
 - End of Time and Eschatology

○ Bibliography:

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

1. Amiet, Pierre, 1981, Art in the Ancient World: A Handbook of Styles and Forms, New York, Rizzoli.
2. Bottero, Morris, 1992, Mesopotamia: Writing, Reasoning, and the Gods ,Chicago ,Univ. of Chicago Press.
3. Akurgal, Ekrem, 1968, The Art of Greece: Its Origin in the Mediterranean and the Near East, New York, Crown.
4. Cotterell Arthur and Storm Rachel,2014, The Encyclopedia of World Mythology, Hermes House, China.
5. Daniels Mark,2016,World Mythology in bite-Sized Chunks,Michael O' Mara Books Limited,London
6. Davies Nigel and Hammond Norman, 2000,Empires Of Early Latin America: The Maya , The Aztecs , The Incas,Folio Society.
7. Egyptian Book of the Dead: The Book of Going Forth by Day: Being the Papyrus of Ani, Trans. Raymond O. Faylknor,1994,San Francisco Chronicle.
8. Hurwit, Jeffrey .M. 1985, The Art and Culture of Early Greece 1100-480 B.C. Ithaca, N.Y: Cornell Univ. Press.
9. Scully, Vincent, 1979, The Earth, the Temple and the Gods: Greek Sacred Architecture, Yale Univ. Press.
10. Saggs O.R., Gardiner H.W.F, Cook Alan, Gurney J.M.,1999,Empires of the Ancient Near East: The Hittites; The Babylonians; The Egyptians; The Persians, Folio Society
11. Walisiewicz Marek, Dye Kati, Abbott Louise, Dickson Jamie and Tomly Sarah, 2007Eyewitness Companions Mythology,Dorling Kindersley Limited,Delhi,
12. Woolley,Leonard,1961,The Art of the Middle East including Persia ,Mesopotamia and Palestine ,New York ,Crown

Certificate Course

Shinde



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

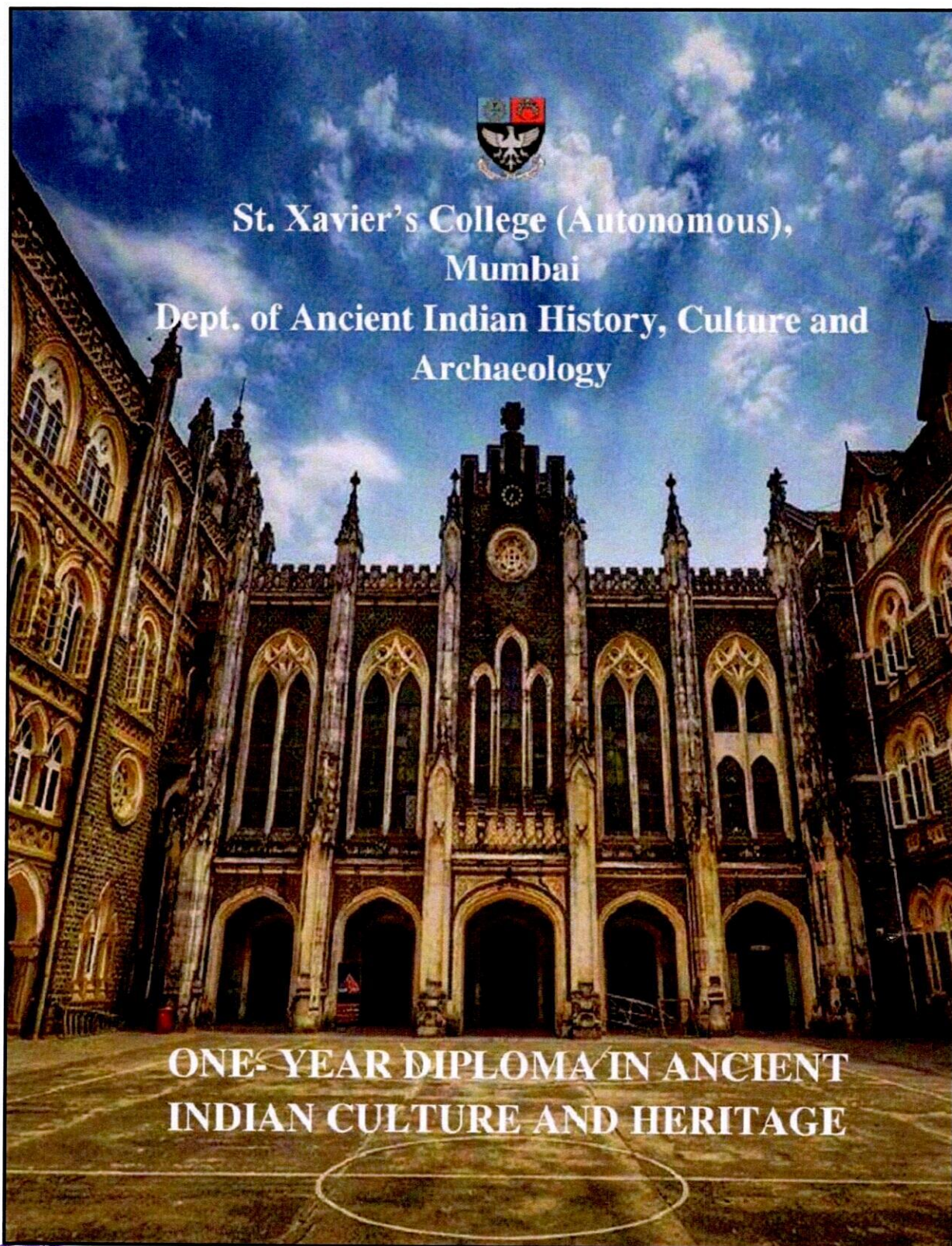


ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



**St. Xavier's College (Autonomous),
Mumbai**

**Dept. of Ancient Indian History, Culture and
Archaeology**

**ONE-YEAR DIPLOMA IN ANCIENT
INDIAN CULTURE AND HERITAGE**



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Coursework :-

1. An exam for each module of 100 mark each will have to be attempted by the participants at the end of the instructional year in the month of April.
2. A dissertation consisting of a topic from within the modular framework has to be submitted before the final exam and will carry 150 marks.
3. Only after completing this course work will the participant be awarded the Diploma certificate.
4. Fieldwork is an essential part of this course , participants are expected to attend at least one field trip during the instructional year.Fees for the field work to excluded from the course fees.A few lectures will also be held on campus with prior notification to students for face to face interaction

Eligibility :-

1. HSC cleared candidates from any stream can apply.

Course fees:- Rs.12,000/-

Day:- Saturday

Timing :- 2:00pm – 5:00pm

Mode of Teaching :- Online

For details contact:

Dr. Anita Rane- Kothare (HOD),

Mr. Jason Johns (Course Co-ordinator) –jason.johns@xaviers.edu

Admission Form Link:-

https://docs.google.com/forms/d/e/1FAIpQLScfvKr38JrrWMKxP-hz9e8JhRG1NAAvubPwiqQEUcuapayD0A/viewform?usp=sf_link



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Anita Rane
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Module I :- Indian Culture and Heritage- The Theoretical Essence

Unit I:-General Survey of Indian Culture and Heritage

- i. Sources for the Study of Indian Heritage and Culture
- ii. Timeline of developments of India through the Ages (From Prehistoric to Early Medieval Period)
- iii. Facets of Indian Heritage (Tangible and Intangible)

Unit II:-Social, Political, Economic and Religio-Philosophical facets of Indian Culture

- i. Purusharthas, Varnashramadharma and Samskaras
- ii. State, Kingship, Administration, War and Inter-state Relations
- iii. Vartta and Guilds
- iv. Shaivism, Vaishnavism, Shakta, Buddhism and Jainism
- v. Upanishads and Six systems of Philosophy

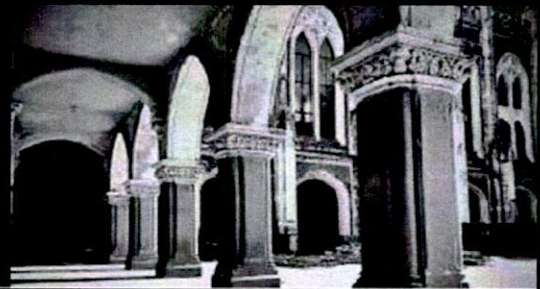
Module II :- Indian Culture and Heritage:- The Tangible and its Conservation

Unit I: Art and Architecture

- i. Pre-Historic and Proto Historic Art
- ii. Historic and Late Historic Art
- iii. Cave and Stupa Architecture
- iv. Temple Architecture
- v. Iconography and Iconometry
- vi. Paintings

Unit II-Conservation & Museology

- i. Aims and Functions of a Museum
- ii. In-house and Outreach activities
- iii. Working Principles, Introduction to Preventive and Remedial Conservation



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alunch
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ENGLISH

**A History And Developing Aesthetics Of Women Pioneers In Using The Moving Image
As Seen In Early World Cinema
Honours 2 credit activity 2019-2020**

A Series of Film Lectures conducted by
Kamalendra Mundul (Jethu Mundul)
Mobile No: 91 9820254429 /
Email: jethum@gmail.com

Concept Note

A new language form came into being at the turn of the 20th century, using audio and visual language forms of the existing Arts, to acquire an identity of its own.

It was immersed in a series of histories which conditioned the process of its invention into the shape of Cinema or Photoplay as it was then known as.

In the early years film technology and production were still undercapitalized and artisanal—and this had a crucial influence on what these attempted Images and Sounds grew into.

Film scholars, including historians and preservationists, reached back to the beginnings before the theory of film in the 1920s, and it is largely through those eyes that the shadowy lost world of women pioneers in early cinema is being retrieved and seen.

These lectures will examine this language of the creation of Narrative in Early world cinema through its history of technology and aesthetics as seen by Women Pioneers.

The lectures have been uniquely and specifically designed and compiled in India by the presenter, from available world resource material, to facilitate greater awareness and understanding of the newer historical and conceptual facets of world cinema and womens' role in it.

Page 1 of 2

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

Course Content

- ❖ The lectures will progressively investigate
- ✚ The practices, theories and debates surrounding the emergence in primitive cinema
- ✚ The work of women pioneers in the early studios/organisations that encouraged them
- ✚ The experiments with sound and the arrival of the edit
- ✚ To develop a cinematic expression through narratives
- ✚ The development of studio system filmmaking in the first half of the 20th century
- ✚ The transition to the sound era
- ✚ Formalist and realist traditions
- ✚ Technological innovations and audiences reception.
- ❖ **To ensure alertness and participation**
- ✚ Continuous Screenings of short films and feature film extracts compiled by the presenter .

The lectures will be conducted by Kamalendra Mundul, an alumnus of the Film and Television Institute of India (FTII), Pune from 1975.

Jethu Mundul, as he is commonly known on film credits and places he teaches at , has devoted over a decade to the study and teaching of films at FTII and other organisations thereafter since 2004, and has specially designed his series of film lectures thereafter as a necessary grounding for students and lovers of film.

He continues to innovate with his presentations with every successive course and in the continuous research he does, in uncovering newer material when not teaching.





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF PSYCHOLOGY

Research Paper Writing and Presentation at Khandala Seminar

on

PERCEPTION: IN THE EYE OF THE BEHOLDER

Honours 2 Credit Activity 2019-2020

Course Write –up

- This is a voluntary activity that psychology students of fy, sy and ty can enrol for. Work begins in August and culminates in January.
- A broad theme is agreed upon after brainstorming with students. Each student chooses a specific topic (within that theme) to write their seminar paper on.
- They receive a two hour initial training on how to decide on specific topic for their seminar paper. They are taught basic research and reference skills. Then students need to work on their own time (involving more than 15 hours of work, usually during the diwali vacation) to create a literature review and outline for their paper.
- They will consult with the teaching staff (they have chosen as their guides) to organize and refine their written paper to be submitted. Final year students who have had experience with this activity are also available to mentor the students doing this for the first time.
- Enrolled students also receive one hour training on effective presentation skills before the seminar.
- The presentation happens in front of a group of peers and staff at the annual Khandala seminar that spans one and a half days (and includes around 15 contact hours of work at Khandala). This entails presentation of one's own paper and attending and giving feedback on others' papers.

Page 1 of 2

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

- There are numerous **advantages** to such an activity as a learning experience for both the student presenters (who learn about research skills and presentation skills) and the student audience (who learn by observing both good and average presentations).
- There is a specific kind of set induction for this seminar which results in a sense of meaningfulness, interest and enthusiasm on the part of students.
- A mastery orientation rather than a performance orientation is encouraged. Everyone learns to give honest, constructive feedback according to specific criteria provided related to the content and style of presentation.
- The final grade on the certificate given by the department takes into account the effectiveness of the presentation, the quality of the written paper and collated audience feedback.
- Using feedback obtained from students over the years, this paper takes a critical look at the **strengths and challenges** of such an activity, from a pedagogical point of view.
- The **presentation sessions** last 45 minutes each with 30 minutes for the speaker and 15 minutes for audience interaction, discussion and feedback.
- Since PPTs are not used, students are encouraged to know their content thoroughly and to find other creative ways of enhancing their presentation and holding the attention of their peers.

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF MANAGEMENT STUDIES

Technical Analysis

Honours 2 Credit Activity 2019-2020

Course Content

- Difference between Technical & Fundamental Analysis
- Understanding of important financial terms & categorization of stocks
- Candlestick patterns
- ❖ **Important Reversal & Continuation Patterns with extremely profitable trading strategies like:**
 - 1) Engulfing patterns
 - 2) Hangman
 - 3) Spinning Top
 - 4) Shooting star
 - 5) Inverted Hammer
 - 6) Piercing & Dark cloud Cover
 - 7) Harami Patterns
 - 8) Star patterns
 - 9) Tower Top & Bottoms
 - 10) Dumpling top & Frypan Bottoms
 - 11) Shaven Top & Bottom
 - 12) Doji
 - 13) Counterattack Lines
 - 14) Hammer etc.
 - 15) Use of Momentum Indicators to successfully identify trend reversals

Page 1 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

- 16) RSI
- 17) Volume Analysis
- 18) Moving Average (EMA)
- 19) Moving Average Convergence Divergence (MACD)
- 20) Bollinger bands
- 21) Stochastic Oscillator
- 22) Parabolic SAR
- 23) Application of techniques with candlestick patterns
- 24) Identification of your trading style based on your risk taking ability

Practical training

Total number of classroom training: Lectures + Practical training (18 hrs + 12hrs assignment)


Total number of training hours: 30 hrs

❖ **Mode of Evaluation:** Report writing on the Training Modules

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Research Project Antibacterial properties of silver nanoparticles
Honours 2 Credit Activity 2019-20

Course Content

Nanoparticles are materials that are between 1 and 100nm in diameter (Edmundson.M, 2013). The reason of nanoparticles finding immense use, more than antibiotics is that the mechanism of action of nanoparticles is direct contact with bacterial cell wall instead of penetrating the cell which prevents the bacteria in having resistance for it.


In a time of growing MDR in which most bacterial strains have become resistant, nanoparticles have emerged as a strong alternative to cure patients of infections. However, further research needs to be done for the worldwide use of nanoparticles replacing traditional antibiotics.

Content

- Introduction to nanotechnology
- Applications and significance of nanoparticles
- Synthesis of silver nanoparticles
- Screening of antibacterial properties of silver nanoparticle against 2 gram + and 2 gram- bacteria.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Open Ended Project

Plant propagation through various modes

Honours 2 Credit Activity 2019-2020

Course Content

- *This course will help students to understand methods of plant propagation. The seeds of Black eyed pea leaves of Sansevieria and Pedilanthus plants will be used for the experiments.*

❖ The project will include

- Introduction to plant propagation
- Methods in plant propagation
- Practical based on seeding, cutting and grafting

❖ Evaluation

On the basis of experimental setup, observations documented and written project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

CHEMISTRY IN CONTEXT
HONOURS TWO CREDIT COURSE 2019-2020

SYLLABUS

2 CREDIT COURSE [LECTURES & PRACTICALS]
[45hrs or more]

LEARNING 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 as well as science majors explores the intersection of chemistry with everyday life.

The course includes topics such as health, food and nutrition, kitchen chemistry, plastics, chemicals in the environment, and synthetics. This course is intended for both science and 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, and nutrition and life.
5. Apply knowledge of chemistry to improve quality of life.

UNIT I: Relevance Of Chemistry

1.1: Life without Chemistry

1.1.1: Chemistry matters.

1.2: Food Chemistry

1.2.1: Food processing-colouring and flavouring agents.

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

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

Page 1 of 3



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

UNIT II: Chemistry In Everyday Life (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.

UNIT IV: Practicals (2 Sets)

Set I

Expt 1: Determining the Assay of different brands of pharmaceutical drugs and studying their purity.

Expt 2: Comparative study of estimation of Copper by different methods of analysis.

Set II

To analyse heavy metals in vegetables grown near railway tracks/ industrial areas

Mode of Evaluation: MCQs & Practicals

Page 2 of 3



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Research Project In Inquiry Based Practicals For Organic Chemistry
Honours 2 Credit Activity 2019-2020

Course Content

Introduction

One of the unique factors of chemistry is that it can be manipulated extensively to one's design.

The project is open-ended and focusses exclusively on re-designing of organic synthesis with respect to reagents, stoichiometry, analysis and inference; and to perform a comparative study on them. The project involves a planning session, experimental sessions followed by a written report. This project would allow students to design, plan, execute and extrapolate the protocols for a given practical on their own; along with its critical analysis and interpretation.

Content

- Reduction of nitro compounds – Literature review, theory, practical synthesis of products with some reducing agents, mechanism, yield.
- Synthesis of Schiff bases – Literature review, theory, practical synthesis of Schiff bases with some carbonyl compounds, mechanism, yield.
- Synthesis of Oximes - Literature review, theory, practical synthesis of Oximes with some carbonyl compounds, mechanism, yield.

Mode of evaluation: Practical skills + Report



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Research Project in Food and Environmental Chemistry
Honours 2 Credit Activity 2019-2020

Course Content

- ❖ The prime aim of this project was to study and evaluate different aspects of food and environmental chemistry from perspective of safety and wellbeing of mankind.

The project includes two parts:

Water analysis and Food analysis

❖ Water analysis:

- All the essential parameters (According to The Environmental Protection Agency Act, 1992) to be studied.
- Collection of Water samples from the different parts of Mumbai
- Standardization and analysis of various methods for these samples
- Parameters for all the water samples to be tested in laboratory
 - Acidity
 - Alkalinity
 - Salinity
 - Dissolved Chlorine
 - TDS
 - Sulphate content
 - COD, BOD, DO,
 - Nitrite Content and Fe Content.
- Comparative study of different samples of water

Page 1 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alkande

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

© 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

❖ Food analysis;

- The main objective is to do the Comparative Study and Qualitative Analysis of Different Brands of Cold Drinks Available in Market.
 - For the analysis purpose five different brands of cold drinks namely, Coke, Pepsi, Sprite, Fanta and AppyFizz will be studied.
 - Instrumental and non-instrumental methods to study.
 - Parameters to be studied for analyzing cold drinks samples
 - pH
 - Carbon dioxide
 - Glucose, phosphate (Instrumental and Non-Instrumental Method)
 - Alcohol, and Sucrose content.
 - Comparative study of all cold drink samples
- ❖ **MODE OF EVALUATION:** Written Project Report

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Workshop: Applications of Chem-Draw- A tool in Chemistry
Certificate Course (2 Credit) 2019-2020

Course Content

Introduction

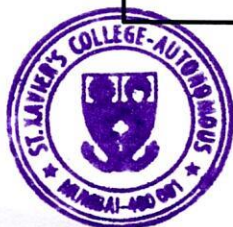
ChemDraw is a software which enables user to edit molecule, make structures, and formulate reactions. The drawing of chemicals structures and reaction schemes is a repetitive task for all the chemists at all levels of education.

While hand-sketching is generally used for presentation, journals, etc. these ways aren't neat and making in symmetry is difficult. Hence to make structures, several computer softwares are used, one of the most efficient software being ChemDraw. ChemDraw is available for Windows as well as MAC.

Topics to be covered in the course

- Chem Draw basics
- Drawing techniques
- Analysis tools
- Drawing chemical structures
- Captions and atom labels
- Orbital's symbols and other shapes
- Use of TLC plate tool
- Prediction of ^1H NMR and ^{13}C NMR
- Drawing reactions and their mechanism
- Sharing ChemDraw information.

Assessment method: Test



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

LaTeX Workshop
Certificate Course (2 credits) 2019-2020

Course Content

❖ Introduction

LaTeX is a very powerful and versatile typesetting system, and it is completely free. It can be used to create high-quality technical and scientific documents. It can be used to write letters, reports, articles, and even to prepare presentations. LaTeX allows the writer to focus on the content of the document, while the rest of the typesetting is taken care of by the software.

Through a series of hands-on sessions, I intend to introduce the learner to the most important aspects of LaTeX and how they can use this software as an indispensable typesetting tool for articles, reports, presentations, etc.

❖ Topics to be covered

1. Introduction to LaTeX
2. Writing a basic document in LaTeX
3. Accents and special characters in LaTeX
4. Mathematics in LaTeX
5. Writing a Technical Report in LaTeX
6. Other applications: Making question papers, presentations, MO diagrams, etc. on LaTeX

❖ **Assessment method:** Written Project Report



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

© 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Workshop On Math Type Including Literature Survey
Certificate Course (2 credits) 2019-2020

Course Content

□ Introduction

Math Type is interactive equation software from developer Design Science (Dessci) that lets you create and annotate math notation for word processing, desktop publishing, presentations, eLearning, and more. Math Type is a complementary desktop program that allows users to create formulas, edit them, and insert them into a variety of documents. With this software students, educators, and professionals can build authentic formulas for research papers and rigorous review. Traditional word processors are limited when it comes to working with complex mathematical equations or scientific expressions.

□ Topics include

1. Introduction of math type software
2. Installation process
3. Use of various toolbars of software
4. Equation designing process
5. Transfer of math type data to the required documents



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honors' course (2 Credit) for 2019-20

offered by

Caius Research Laboratory

Research Methodology And Analytical Techniques (Basic)

Course Content

Description: The course involves introducing students to Design of Experiment and application of analytical techniques to research.

The course will involve the following:

1. Introduction to good laboratory practice and safety in lab
2. Introduction to concepts of research
3. Calibration of micropipette
4. Testing accuracy of pipetting and use of UV spectrophotometer
5. Concept of Mole and preparation of solutions
6. Microscopy: Understanding Light binocular microscope-Bright Field polarising phase contrast microscope
7. Histochemical Localisation and Analysis of different Biomolecules in a Cell using different samples like leaf and seeds
8. Understanding Enzyme Assay: Assay of Succinate Dehydrogenase using moong and pea seeds
9. Effect of Different Metal ions on the Activity of Succinate Dehydrogenase Enzyme

Evaluation: Continuous evaluation and report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity 2019-2020

A Survey on Awareness, Behaviour and Level of Sensitivity of Students towards Environmental Issues among Students of St Xavier's College, Mumbai.

Course Content

Description:

Our environment plays a significant role in shaping our lifestyle. There are a myriad of major environmental issues that face us today.

The aim of this study is to comprehend the behaviour and attitude of students of our college towards these problems.

The course will involve the following:

- Identify the most important and valid environmental issues in the current scenario
- Prepare a sampling plan and design a questionnaire
- Conduct a survey within college
- Analyse the data collected
- Write a report

Evaluation: Continuous Evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity 2019-2020

Global Climate Change

Course Content

Description:

Global Climate Change (GCC) is increasingly posing a threat to communities around the world. Recent international climate change summits, while recognizing the importance of addressing this issue, have highlighted the challenges of dealing with it on a global scale. Furthermore, GCC needs to be thought of in the context of environmental justice, as some countries and people are facing disproportionate impacts of climate change. This interactive course will explore some of these environmental justice issues not just theoretically but directly through first-hand accounts and stories of injustice. Students in this hands-on course will also learn concrete ways of how to bring about change by engaging in an action project of their choosing.

The course will involve the following:

- Lecture series by Guest speakers
- Focus on GCC & environmental justice.
- Interactive sessions
- Role plays and presentations based on case studies
- Action project with a local environmental organization- working as a team
- Reflections on the different aspect of environmental issues

Evaluation: Continuous Evaluation and Action Project Report



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity 2019-2020

A Survey of Self-medication Practices in the Mumbai Population

Course Content

Description:

Self-medication is the use of drugs to treat self-diagnosed disorders or symptoms or the intermittent or continued use of prescribed drugs for chronic or recurrent disease or symptoms, and it is mostly common in developing countries.

The course will involve the following:

- Planning a study to assess the practice of self-medication among the urban Mumbai population.
- Planning for data sampling and collection strategies
- Conduct a survey through use of pretested questionnaires from various sections of the population.
- Data summarization
- Analysis of data using descriptive and inferential statistics such as Chi-square and Fisher's exact tests.

Evaluation: Continuous Evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity 2019-2020

Studying Chick Retinal Neurogenesis

Course Content

Description:

Development of retinal neuronal layers will be studied using histological techniques, in the chick embryo system.

The course will involve the following:

- Handling fertilized eggs
- Studying embryo stages
- Dissecting embryo
- Performing histological techniques including specimen preparation and microscopy
- Writing a report

Evaluation: Continuous Evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity 2019-2020

Algal CO₂ Scrubbers for Use as Air Purifiers.

Course Content

Description:

Microalgae are one of the most efficient photosynthetic CO₂ fixers. They produce oxygen during this process. Since they require minimum nutrients and light to carry out this process one can design lighting solutions to double up as algal reactors carrying out air purification.

The course will involve:

- Learn to work with algal culture
- Media preparation
- Enumeration of algae
- Morphological characterization of the algae.
- Creating growth curve for the algal isolate
- Design experiments to grow algae and monitor CO₂ uptake of the culture.
- Write a report

Evaluation:

Continuous Lab work evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF STATISTICS

Soft Skills Development Workshop
Honours 2 Credit Activity 2019-2020

Content

❖ Introduction

Soft skills are the skills that enable you to fit in at a workplace. They include your personality, attitude, flexibility, motivation, and manners. Soft skills are so important that they are often the reason employers decide whether to keep or promote an employee

❖ Sessions on

- Brainstorming session of puzzles and brain teasers
- Team-building and networking
- Team wise competitive fun-filled games like a Bollywood Quiz and Taboo to Inculcate competitiveness
- Public speaking and communication skills.
- Activities like elevator pitch and impromptu speeches.
- Get Magnetic and Break Time Clutter.
- Group Discussion
- Resume building
- Personal interview
- How to deal with both - success and failure



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF STATISTICS

Primary Market Research
Honours 2 Credit Activity 2019-2020

Course Content

❖ Objective of the Course

First- hand experience on a live industry project. Applying theoretical knowledge to practical purposes.

❖ Sessions

- Hands-on experience on collecting the data
- Analyzing the same using data visualization
- Descriptive statistics and Statistical Modelling (Binary Logistic)
- Applications of Binary Logistic Regression in Marketing Analytics, Churn Management, Risk Management and Insurance.
- Calculating Net Promoter Score (NPS) for our various brands under study
- Ways to analyze and present data to make it visually appealing
- Newer techniques like Social media listening



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF STATISTICS

Applications of Distributions in Industry
Honours 2 credit Activity 2019-2020

Course Content

❖ Objective of the course

How the distributions are applied by analytics professionals in their regular Business analysis and model building.

Outcome: Exposure of how Statistics is widely used in various industries.

❖ Topics to be covered

- ✓ Applications of Statistical distributions in Marketing Analytics
- ✓ Financial Analytics
- ✓ Consumer Financing
- ✓ Risk Framework
- ✓ Fraud detections.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



St. Xavier's College (Autonomous) -
Mumbai

Syllabus For
**DIPLOMA IN FORENSIC SCIENCE
& CRIMINAL LAW**



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Blinda

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

DIPLOMA IN FORENSIC SCIENCE AND CRIMINAL LAW

Learning Objectives of the Diploma in Forensic Science and Criminal Law:

- To provide an introduction and orientation to the functioning of the Indian Criminal Justice delivery system, and the role forensic science plays in this process.
- To hone the basic skills necessary for forensic science investigations.
- To develop a critical understanding of the diverse institutions of 'crime' control.
- To demonstrate competency in the collection, processing, analyses, and evaluation of evidence.

Learning Outcomes of the Diploma in Forensic Science and Criminal Law:

- Should be able to demonstrate competency in the principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence.
- Should be able to demonstrate an understanding of the scientific method and the use of problem-solving within the field of forensic science.
- Should be able to identify the role of the forensic scientist and physical evidence within the criminal justice system.
- Should be able to demonstrate the ability to document and orally describe crime scenes, physical evidence, and scientific processes.
- Should be able to identify and examine current and emerging concepts and practices within the forensic science field.

Course Units and Credits

SEMESTER	UNIT NO	UNIT NAME	CREDIT POINTS
1	SXC-DFSCCL-01	The Basics of Crime Scene Investigation	4
1	SXC-DFSCCL-02	Ethics and Research Methods in Forensic Science	4
1 & 2	SXC-DFSCCL-03	The Functioning of the Indian Judicial System: Crime Scene to Court Room	4
2	SXC-DFSCCL-04	Impression Evidence	4
1	SXC-DFSCCL-05	Introduction to Forensic Serology	4
2	SXC-DFSCCL-06	Forensic DNA Analysis	4
2	SXC-DFSCCL-07	Microbial Forensics and Forensic Immunology	4
1	SXC-DFSCCL-08	Forensic Toxicology and Medicine	4
1 & 2	SXC-DFSCCL-09	Emerging Trends in Forensic Science	4
1 & 2	SXC-DFSCCL-10	Research Case Study and Moot Court	6





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

UNIT 1

➤ THE BASICS OF CRIME SCENE INVESTIGATION (10 lectures)

An introduction of the application of science to solving crime

- Definition, Specializations in Forensics, Basic structure of Forensic Labs in India
- Mechanics of Justice and the Justice Triangle
- Locard's Exchange Principle
- Concepts of Identification, Individualization, Classification, Exclusion, Evidential Value
- Types of Physical evidence
- Processing & Investigation
- Defining the crime scene; Basic processing methodology
- Evidence recognition
- Documentation techniques
- Packaging, storage and transportation of evidence
- Control Samples, Scientific and Legal integrity of evidence

➤ Assessment Modalities

- Mock Crime Scene Practical (30%)
- Assignment (20%)
- Mock Test (10%)
- End of Unit Examination (40%)

UNIT 2

➤ ETHICS AND RESEARCH METHODS IN FORENSIC SCIENCE (12 lectures)

There are three interrelated modules

- Ethics in Forensic Science – the necessity for a professional ethical code in the practice of forensic science and describes the ethical conflicts that can arise when working in this profession.
 - Introduction to Quality, Competency & Ethics
 - Quality Control and Quality Assurance
 - Laboratory Standards; Accreditation and Certification
 - Quality of an Individual
 - Ethics in Forensic Science
- Research Methods in Forensic Science – the relevance and application of the scientific method in modern forensic science, including formulating research questions, applying the appropriate research methodology and making recommendations based on the analysed result.
 - Various components of the Scientific Method
 - Effective scientific communication through scientific writing and oral presentations
 - Critical Analysis of a Forensic Case Study





Syllabus for the Diploma course in Forensic Science, St. Xavier's College (Autonomous) - Mumbai

- Application of Statistics in Forensic Science –the use and interpretation of statistics as a tool in analysing forensic data.

➤ **Assessment Modalities**

- Class Debate – Group based Activity (20%)
- Forensically Applicable Statistics Assignment (10%)
- Literature Review (15%)
- End of Unit Examination (50%)
- Attendance (5%)

UNIT 3

➤ **THE FUNCTIONING OF THE INDIAN JUDICIAL SYSTEM: CRIME SCENE TO COURT ROOM** (15 lectures)

An examination of the nature and purposes of criminal law along with the basic elements of criminal offences.

- Understand how a FIR and Panchnama are filed
- The hierarchy of the Court system in India
- Basic elements of an offence and their analysis
- Process of a Criminal Trial– from arrest of the suspect to sentencing
- The role of the forensic scientist as an expert witness
- Admissibility of forensic evidence

➤ **Assessment Modalities**

- Assignment on the application of relevant laws to a mock case scenario (20%)
- Mock Tests (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 4

➤ **IMPRESSION EVIDENCE** (12 lectures)

An outline of how markings are produced when one object comes into contact with another, leaving behind some kind of indentation or print known as impression evidence. Such evidence encountered includes footwear impressions, tyre marks, and markings created by tools and similar instruments.

- Introduction to Fingerprints and Biometrics
 - Basic principles of fingerprint analysis, comparison and identification
 - Introduction to biometric systems of identification
- Introduction to Firearms and Ballistics
 - Parts and Types of firearms, mechanism of firing a weapon
 - Forensic evidence left at the crime scene
 - Reconstruction of crime scenes involving firearms
- Introduction to Other Impression Evidences
 - Questioned Document Examination & Signature Verification





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science, St. Xavier's College (Autonomous) - Mumbai

- Explain the forensic significance of class and individual characteristics to the comparison of tool mark, footwear, and tire impressions

➤ **Assessment Modalities**

- Fingerprint Practical (15%)
- Questioned Document Practical (15%)
- End of Unit Examination (60%)
- Attendance (10%)

UNIT 5

➤ **INTRODUCTION TO FORENSIC SEROLOGY** (10 lectures)

The application of the study of blood, semen, saliva and other body fluids, to legal matters.

- Body fluids found at crime scenes
 - Introduction to body fluids; related crime scenes
 - General crime scene processing methodologies
- Blood
 - Composition; Basic blood genetics
 - Forensic analysis of blood evidence
 - Blood spatter analysis – blood flight characteristics, types of BSP, crime scene reconstructions
- Semen and Sexual Assault Cases
 - Composition of semen; sexual assault and rape crime scenes
 - Examination of the victim
 - Forensic analysis of semen stains
- Other Body Fluids
 - Forensic analysis of Saliva
 - Forensic analysis of Urine

➤ **Assessment Modalities**

- Blood Spatter Practical (15%)
- Body Fluids Practical (15%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 6

➤ **FORENSIC DNA ANALYSIS** (15 lectures)

The basics of cell biology and DNA analysis, and its application to investigations and the judicial system. Special reference is made to the application of forensic DNA technology to prosecutions, defences and exonerations.

- DNA – definition, importance, sources, types of crime scenes; historical perspective
- Short Tandem Repeats; Low copy number DNA; Y chromosomal analysis; Mitochondrial DNA
- CODIS – Combined DNA Index System





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- DNA evidence processing – Collection, Extraction, RFLP v/s PCR, Separation techniques, Output data interpretation
 - Problems in DNA Analysis; Mixtures of DNA
 - Paternity Testing- Genetic Systems used for Paternity Tests
 - Statistics & Population Genetics – Hardy Weinberg Equilibrium
- **Assessment Modalities**
- Power point Presentation (25%)
 - Mock Tests (15%)
 - End of Unit Examination (60%)

UNIT 7

- **MICROBIAL FORENSICS AND FORENSIC IMMUNOLOGY (15 lectures)**
Microbial Forensics combines principles of public health epidemiology and law enforcement to identify patterns in a disease outbreak, determine which pathogen may be involved, and trace the organism to its source.
- Differences between Bio crimes and Bioterrorism
 - Biosecurity & Microbial Forensics – types of biological agents, collection, preservation and analysis of these biological agents during investigation
 - Management of biological threats – evaluate biosecurity threats and implementation of resolution through microbial forensics analytical techniques
- **Assessment Modalities**
- PowerPoint Presentation (25%)
 - Assignment (10%)
 - Mock tests (10%)
 - End of Unit Examination (50%)
 - Attendance (5%)

UNIT 8

- **FORENSIC TOXICOLOGY AND MEDICINE (15 lectures)**
There are three interrelated modules
- Forensic Toxicology – an introduction to toxicological samples, including their presumptive and confirmation testing in a variety of biological materials. A comprehensive, pharmacological and analytical review of some major alcohol and drug classes is taught.
 - Forensic Medicine – an overview of the protocols of the mortuary and crime scene, the medico-legal autopsy and post-mortem changes relevant to the solving of a crime.
 - Forensic Anthropology & Odontology – how information gathered from skeletal and dental materials can be used to determine the age, sex and stature of an individual, while providing evidence of pathology and/or trauma.
- **Assessment Modalities**
- Class Discussion related to Forensic Medicine (10%)





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Toxicology Practical (20%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 9

➤ EMERGING TRENDS IN FORENSIC SCIENCE (15 lectures)

Advances in technology as well as society's growing dependence on technology have changed the way in which crime is investigated and the types of crimes committed, with a notable increase in cybercrime offences.

- Cyber Crime Investigation
 - Understanding cyber forensics
 - Cyber Law
 - Electronic crime scene investigation (electronic evidence; internet; networks)
 - Digital Privacy
 - Types of cyber crime
- Integrating forensic techniques into incident response
- Recent advances - forensic accounting, forensic engineering, forensic psychology

➤ Assessment Modalities

- Cyber Forensics Practical (20%)
- Forensic Psychology Practical (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 10

➤ RESEARCH CASE STUDY AND MOOT COURT (15 lectures)

Independent research into a topic in the field of forensic science supported by lectures taught during the course. Students are trained to give scientific expert witness testimony in their chosen topics.

➤ Assessment Modalities

- Literature Review (20%)
- Case Study Research Report (40%)
- Moot Court (40%)

Practical Course:

1. Investigation and Processing of a Mock Crime Scene
2. Questioned Document Examination
3. Fingerprint Processing, Analysis and Identification
4. Blood Spatter Analysis on various surfaces
5. Body Fluids Analysis – saliva and blood
6. Toxicological Analysis of Drugs using Thin Layer Chromatography





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

Recommended References:

- Casey, E. (2011). *Digital evidence and computer crime: Forensic science, computers, and the internet*. Academic press.
- Houck, M. M., & Siegel, J. A. (2009). *Fundamentals of forensic science*. Academic Press.
- Fisher, Barry, A. J., Tilstone, W. J. & Woytowicz, C. (2009). *Introduction to Criminalistics: The Foundation of Forensic Science*. Elsevier Academic Press.
- Robertson, B., Vignaux, G. A., & Berger, C. E. (2016). *Interpreting evidence: evaluating forensic science in the courtroom*. John Wiley & Sons.
- Saferstein, R. (2013). *Criminalistics*. Pearson Education.

#####





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

**5, Mahapalika Marg, Mumbai - 400 001,
INDIA.**

☎ 2262 0661/65

2018 - 2019



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

STUDY OF EPIGRAPHY AND NUMISMATICS OF INDIA

○ **Objective:**

- This is a course deals with development of the study of scripts and coinage in ancient India which enable a student to utilise the sources to reconstruct the past. The course will be dealt with the help of Literary, Archaeological, Numismatic and Epigraphic evidences for a holistic view of the facets of Indian culture.

○ **Content:**

- Introduction to Epigraphy
 - Aims, scope and definition of epigraphy
 - Origin and development of different scripts with special reference to Indus script, Brahmi, Kharoshthi
 - Indian eras (Shaka, Vikrama, Gupta, Chedi-Kalchuri)
- Ancient Indian Scripts
 - Brahmi
 - Kharoshthi
 - Persian
 - Introduction to post-ancient scripts for referencing and development of these ancient Indian scripts
- Introduction to Numismatics
 - Aims, scope and definition of numismatics
 - Medium of exchange
 - Techniques of manufacturing
- Coinage
 - Janapada (PMC & EUCC), Indo-Greek-Parthian- Scythian
 - Western Ksatrapas, Kushan, Satavahana, Tribal coins
 - Gupta, Pallavas, Chola and Cheras
 - Delhi Sultanate and Greater Mughal Coins

Bibliography:

1. Allan, J. 1935. Catalogue of Coins of Ancient India. London: British Museum.
2. Allchin, F.R. and K.R. Norman. 1985. "Guide to the Ashokan Inscriptions". South Asian Studies.

Certificate Course

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

3. Altekar, A.S. 1957. Coinage of the Gupta Empire. Varanasi: Numismatic Society of India.
4. Epigraphia Indica Vols. I-X.
5. Gupta, P.L. 1979. (2nd Revised Edition) Coins. New Delhi: National Book Trust.
6. Gupta, P.L. 1981. Coins: Source of Indian History. Ahmedabad: B.J. Institute of Learning and Research.
7. Hultzch.D. 1969. (Reprint) Corpus Inscriptionum Indicarum Vol.I, Varanasi: Indological Book House.
8. Mangalam, S.J. 1990. Kharoshthi Script. Delhi: Eastern Book Linkers.
9. Pandey, R. 1957. Indian Palaeography. Delhi: Motilal Banarsidas.
10. Rajor, Dilip 2001. Punch-marked Coins of Early Historical India. California. Resha Books International.
11. Sircar, D.C. 1965. Indian Epigraphy. Delhi: Motilal Banarsidas.
12. Sircar, D.C. 1986. (3rd edition) Select Inscriptions. Vol.I, Delhi: Asian Humanities Press.

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

HISTORY OF PERFORMING ARTS AND THEATRE IN INDIA

○ **Objective:**

- In an endeavour to further the holistic understanding of Ancient Indian Culture in all the parameters the attempt of this Paper aims to provide a sound grounding in understanding the nuances of performing arts. Focus, will be on the theoretical understanding and the relevance of the same in the realm of studying the essence of Ancient Indian culture. Whether they are sculptures, Art, Architecture, or Paintings, performing arts (Music and Dance traditions) is an innate part of the same. The attempt of this course is to enlighten the student to this synergy between fluid and static arts, this way broadens their horizon and innate understanding of the subject Ancient Indian Culture.

○ **Content:**

- **Sources for tracing the development of Performing arts in Ancient India**
 - Literary Sources: - Specific Study of Natyashastra , Abhinaya Darpana, Vishnu Dharmottra Purana with reference to the Origin and the development of the arts.
 - Document and study the references of Performing arts in the Literary Works of Sacred and Secular.
 - Contribution of Epics, in documenting the development of Performing arts.
 - Study the development of Archaeological sources in documenting the development of performing arts. Specific references, to Brihadeeshwara temple, Chidambaram, Sun Temple in Konark, Ramappa Temple in Warangal. Study the development of the same in the context to Paintings, both Frescoes and Murals.
- **Music**
 - Understanding the elements of Music- Nad, Shruti, Swara, Saptak.
 - Studying the Structure of a Raga- Genesis- Tat, Jati, Vadi, Samvadi, Varjit Swara, Samay Chakra, The importance of Tala (Both Carnatic and Hindustani). A brief idea of the concept and constituents of Khyal and Gath in Instrumental music.

Certificate Course

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

- A study of the basic features and Structure of Gharanas (Hindustani Music) in Khyal Gayaki. Contribution and life history of famous musicians of the Gharanas.
- A study of the basic features of Carnatic Music. The forms of Kirtana, Kreethi , Javali. A study of the life history and contribution of the Trinity to Carnatic music.
- Forms and styles of Vocal performances:-
 - Dhrupad, Dhamar , Khyal, Tarana, Tappa, Thumri, Dadra, Hori
- Classification and study the contribution of Instrumental music In India.
- Material and Technology of musical instruments
- **Dance**
 - The Study of the elements and structure of Dance.:-
 - The concept of Nrta, Nrithya and Natya.
 - Study of Abhinaya- Angika, Vachika, Aharaya and Sattvika.
 - The study of Vrittis
 - Construction of a stage.
 - The study of Rasa and Bhava. :-
 - The Nayak and Nayika bhed
 - The understanding of Natyadharmi and Lokadharmi
 - Thandav and Lasya styles of performances
 - Study of the famous classical dances of India and study the life history of famous dancers and their dance schools with their contribution.
 - Study the famous folk dances from the States of India and their contribution.
 - Garba, Lavani, Kollatam. Lezium, Lambada, Dhimsa, Siddhi, Bihui, Pulikali, Koli dance, Kavadi, Ghumar, Burrakatha, Jatra
 - Material and Technology of costumes and props Material and Technology of the tangible aspects of folk art
- **Traditional Indian Theatre**
 - The development of Tradition Indian Theatre

Certificate Course

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

- Kutiyattam, Yakshanagana, Bhagvatamela natakam, Bhavai, Yatra, Tamasa, Chau
- Traditional Indian Puppetry.
- A critical study of the situation of performing arts today. Their contribution.
 - Media
 - Music and Dance universities and degrees
 - Popular culture- Role of Cinema, College festivals, Organizations and sabha
- **Bibliography:**
 1. Vatsyayan Kapila (1968) Classical Indian Dance in Literature and the Arts, Sageet Natak akademi
 2. Nair Rajeev (2007) A Rasika's journey Through Hindustani Music, Indialog publications pvt ltd
 3. Rao Appa P.S.R and Sastry Rama P (1997) Bharata's Natya Shastra, A naatya mala publication
 4. Coomaraswamy Ananda, (1987) A mirror of Gesture, Munshiram Manoharlal Publishers pvt ltd
 5. Coomaraswamy Ananda (1987) Dance Of Shiva, Munshiram Ma noharlal Publishers pvt ltd
 6. Rangacharya Adya (1971) The Indian Theatre, National Book Trust of India
 7. Kishore B.R (Dr) (1988) Dances of India, Diamond Pocket Books
 8. Rao Krishna U.S (1980) A Dictionary of Bharata Natya, Orient Longman publication
 9. Sarabhai Mrilani (1981) Understanding Bhararatanatyam , Ther Darpana Academy of Performing arts
 10. Tarlekar G.H, (1975) Studies in the Natya Shastra, Motilal Banarsidass publication.
 11. Gosh Manmohan (1975) Nandikesvara Abhinayadarpanam, Manisha Granthalaya Pvt limited
 12. Bagchee Sandeep (1992) Nad Understanding Raga Music, Business Publication Pvt ltd

Certificate Course

Alinda

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



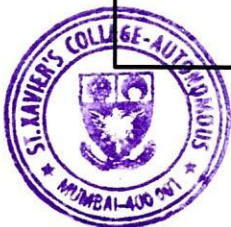
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.
Department of Ancient Indian History, Culture and Archaeology

13. Sangeetha Natya Kala Sanhrama (1985) Kal;asadan publication Mumbai.
 14. Subrahmanyam Padma.Dr (1979) Bharatas art then and now,
Nrithyodaya, Madras
 15. Subrahmanyam Padma .Dr (2003) Karanas Common Dance codes of India
and Indonesia, Nrithyodaya Chennai
 16. Sawra Bharati, (2011) Dance and Dance Traditions , Bharatiya Vidya Bhavan
publication
 17. Bhatkande Sangeet Shastra- Hatras publication (5 volumes)
 18. Classical Dances in India- Bharatiya Vidya Bhavan Publication
 19. Swara Bharati (2011) Dance and Dance traditions- Bharitya Vidya Bhavan
 20. Sangeet Visharad- Hatras Publication.
-

Certificate Course

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

Maritime Heritage of Ancient India

○ Objectives:

- This course is recommended to understand the maritime tradition which existed in India from the proto-historic period. This course will help understand the impact of this traditional heritage on the cultural history of India.

○ Content:

• Introduction to Indian Maritime Trade

- Sources (Literary ,Oral, Archaeological)
- Trade Routes (Land and sea)
- Satavahanas and Trade Guilds

• Maritime Trade in early India

- Ports and Ship yards and types of ship on the western and the eastern coast of India. (Marine archaeology)
- Blue Water trade
- White Water Trade
- Introduction to marine archaeological conservation

• River Economy

- Trading centers and merchant guilds.
- Trade and river system in Northern and central India.
- Trade and river system in Deccan and South India.

• Trade In Early Medieval Period

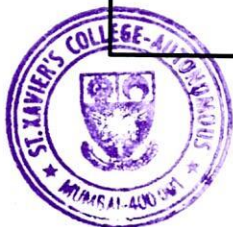
- Trade with South and South East Asia.
- East Asian Trade
- Early European Trade

○ Bibliography:

1. Begley, Vimala and Richard Daniel de Puma, 1992, Rome and India: The Ancient Sea Trade. Delhi
2. Begley, Vimala, 1996, The Ancient Port of Arikamedu- New Excavation and researches 1989-1992- Pondicherry.
3. Boussac, Marie- Francoise and Jean Francois Salles, 1995: Essays on the Interrelations between India, Arabia and the Eastern Mediterranean, New Delhi.
4. Chakravarti Ranabir (ed) 2001, Trade in Early India. Oxford.

Certificate Course

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

5. Chamoakalakshmi. R, 1996, Trade, Ideology and Urbanisation. Delhi.
6. Chandra Moti, 1977, Trade and Trade Routes in Ancient India, New Delhi.
7. Gogte, V.D.2000. Indo- Arabian Maritime Contacts during the Bronze Age: Scientific Study of pottery from Ras al-Junayz (Oman), Adumatu, Issue no.2 (July), 7-14.
8. Jain V.K 1990, Trade and traders in western India, New Delhi.
9. Lahiri Nayanjot, 1992, The Archaeology of India Trade Routes (up to 200B.C), Delhi.
10. Liu Xinria,1988, Ancient India and Ancient China- Trade and Religious Exchanges, Delhi.
11. Ray Himanshu Prabha, 2003, The Archaeology Of Seafaring in Ancient South Asia, Cambridge.
12. Vohra N.N, (ed) 2002 India and East Asia Culture and Society, Delhi



Certificate Course

[Handwritten Signature]

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

Brief study of the Comparative Mythology of the World.

○ Objectives:

- Study of Mythologies of world civilizations.
- Understanding various classifications of myths.
- Comparative analysis of Indian and other world mythologies.

○ Content:

- Introduction to World Mythology
 - Introduction & Origin of the concept
 - Concept and Approaches for Comparative Mythology
 - Linguistic
 - Psychological
 - Structural
 - Historical and comparative
 - Phylogenetical
 - Creation and Regeneration Myths (20 lecs)
 - Creation of Universe & Mankind
 - Creative Sacrifice
 - Regeneration and Resurrection
 - Flood Myth
 - Cult of Deities, Heroes & Animals:
 - Mythical Heroes across the globe
 - Deities & Progenitors
 - Fertility Cult.
 - Broad category of animal & Hybrid animal myths across the globe
 - Space , After Life , Time and End of Times.
 - Mythological Sites & Spaces
 - Concept of After Life
 - Concept of Time
 - End of Time and Eschatology

○ Bibliography:

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.


Department of Ancient Indian History, Culture and Archaeology

1. Amiet, Pierre, 1981, Art in the Ancient World: A Handbook of Styles and Forms, New York, Rizzoli.
2. Bottero, Morris, 1992, Mesopotamia: Writing, Reasoning, and the Gods ,Chicago ,Univ. of Chicago Press.
3. Akurgal, Ekrem, 1968, The Art of Greece: Its Origin in the Mediterranean and the Near East, New York, Crown.
4. Cotterell Arthur and Storm Rachel,2014, The Encyclopedia of World Mythology, Hermes House, China.
5. Daniels Mark,2016,World Mythology in bite-Sized Chunks,Michael O' Mara Books Limited,London
6. Davies Nigel and Hammond Norman, 2000,Empires Of Early Latin America: The Maya , The Aztecs , The Incas,Folio Society.
7. Egyptian Book of the Dead: The Book of Going Forth by Day: Being the Papyrus of Ani, Trans. Raymond O. Faylknor,1994,San Francisco Chronicle.
8. Hurwit, Jeffrey .M. 1985, The Art and Culture of Early Greece 1100-480 B.C. Ithaca, N.Y: Cornell Univ. Press.
9. Scully, Vincent, 1979, The Earth, the Temple and the Gods: Greek Sacred Architecture, Yale Univ. Press.
10. Saggs O.R., Gardiner H.W.F, Cook Alan, Gurney J.M.,1999,Empires of the Ancient Near East: The Hittites; The Babylonians; The Egyptians; The Persians, Folio Society
11. Walisiewicz Marek, Dye Kati, Abbott Louise, Dickson Jamie and Tomly Sarah, 2007Eyewitness Companions Mythology,Dorling Kindersley Limited,Delhi,
12. Woolley,Leonard,1961,The Art of the Middle East including Persia ,Mesopotamia and Palestine ,New York ,Crown

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

**Department of English
Honours Course
2018 - 2019
Course Content
Tradition, Children's Literature
and Travel Writing**



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Translation: A Creative Process

VANIZAVERI

Email: vani.zaveri@gmail.com

Mobile no.: +919819691601

About

A translator transforms into a new self, speaking differently. Where do you fit in? As writers, translators, international business professionals, or anybody working 'in-between' places and cultures - what does it mean to transform, translate, and transport ourselves?


Translation: a Creative Practice is a course where we'll look at translation strategies and the creative potential beyond the creation of translated text. Exercises will lead you into new drafts of original and translated work (literature, spoken word, video, speech) in this new 2-credit course.

Course Description

- ✦ The primary goal of the Translation Workshop is to introduce students to the practice and theory of literary translation and to show how texts travel across cultural borders. At the same time, methodologies derived from the art and craft of translation can be used to revitalize the dialogue with the literary text and provide students with new ways of interpreting literary and humanistic texts.
- ✦ The focus is the actual process of translating--what the translator does, and why. Special attention is paid to the structural differences between English and the Indian languages; the significance of tone and style; the author's "voice" and the translator's "ear"; the on-going problems of fidelity, literalness, freedom, imitation, analogy; and what, if anything, is "betrayed" in translation.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65


- ✦ Students are also encouraged to study the craft of reviewing translations. Texts to be considered in the Workshop include poetic, dramatic, fictional, and essayistic works. In consultation with the instructor, students choose an appropriate text or texts to be translated during the course of the semester. Emphasis will always be placed on producing the best possible final draft in English. The Translation Workshop should be of particular interest to students in creative writing.

Course Schedule

Session	Topic	Coursework	Duration
1. 18 th Sept. 2018	Background	<ul style="list-style-type: none">❖ General Orientation❖ Introduction to the theory and practice of translation❖ General terms❖ Significance and scope of translation❖ Basic Practice	2pm-4pm
2. 19 th Sept. 2018	Translation and Interpretation as skills	<ul style="list-style-type: none">❖ Responsibilities of a translator: The ethics of translation❖ The problem of language (with Essays)❖ Translation as a skill and practice in interdisciplinary and multidisciplinary academic scenarios❖ What is translation: an interpretation: a political act?	2pm-4pm



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)


5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

3. 25 th Sept. 2018	Practicing translation	<ul style="list-style-type: none">❖ Theories and strategies of translating: prose, drama, poetry and films❖ Literary and linguistic analysis of passages❖ The structures of different grammars in source and target languages and the possible solutions to reach accuracy in translation process❖ Trans creation and the transference of meaning❖ Assignment	2pm-4pm
4. 26 th Sept. 2018	Contemporary period and translation: Global scenario	<ul style="list-style-type: none">❖ Globalization and its impact on translation❖ Theories of colonial and post colonial approach to translation❖ Self editing and refining translated works❖ Examples and discussion	2pm-4pm
5. 27 th Sept. 2018	Media and translation: Conclusion	<ul style="list-style-type: none">❖ Using translation as a strategy for communication in fields of education, technology and the corporate world❖ Debates on the boundaries and possibilities of translation and its extent❖ Conclusion	2pm-4pm
{Assignments to be submitted on the 26 th of September}			
Course Credit: 1			



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Recommended Reading

- ❖ Bassnett Susan. Translation Studies, Methuen Routledge. 1980.
- ❖ Lakshmi H. Problems of Translation. Hyderabad. Books Links Corporation. 1993.
- ❖ Nida Eugene A. Theory and Practice of Translation, Brill 2003.
- ❖ Sarang Vilas, the Stylistics of Literary Translation. University of Mumbai 1988.
- ❖ Translation Theory and Practice Tension and Interdependence. Edited by Mildred L. Larson, John Benjamin's publishing Company, 1991.
- ❖ Venuti Lawrence, the Scandals of Translation, Taylor and Francis, US 1998.
- ❖ Venuti Lawrence, Rethinking Translation: Discourse, Subjectivity and Ideology, 1992.
- ❖ Venuti Lawrence, The Translator's Invisibility: A History of Translation, Routledge, 1995.

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

CHILDREN'S LITERATURE

-VANI ZAVERI

vanizaveri.eng@gmail.com

Course Overview

The study of children's literature is fast becoming established at both undergraduate and graduate level with its own academic journals and critical literature, and collections of children's literature are held in many major libraries and museums. In addition, the success of authors such as J. K. Rowling or Philip Pullman suggests that children's literature is thriving and developing in the twenty-first century. In short, children's literature matters; it is significant to parents, educators, librarians, psychologists, childhood studies students and students of literature and - most importantly - to children themselves.


This course aims to trace the origins and development of Children's Literature, ranging from its beginnings in eighteenth-century chapbooks and fairy tales, through seminal nineteenth-century novels, to contemporary examples of fiction illustrating current trends. The course also includes the study of picture books old and new, stage performance and film, young adult fiction, storytelling and poetry. You will learn about the distinctiveness and purposes of children's literature, its prestigious and popular modes and its different representations of children's worlds.

"A childhood without books - that would be no childhood. That would be like being shut out from the enchanted place where you can go and find the rarest kind of joy."

— Astrid Lindgren



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Course Description

This course has been designed to meet the following Course Outcomes and Learning Objectives:

- ✦ To gain new insights into the range, richness, elements, and techniques of children's and adolescent literature; and to gain an appreciation of this rapidly expanding body of literature as part of our literary art, an essential human and cultural phenomenon.
- ✦ Evaluate children's books in terms of literary merit, their interest to children, and possible use in a curriculum.
- ✦ Understand how stories are built, which can also lead those who teach children to help them write their first stories.
- ✦ Recognize how diversity and multiculturalism are portrayed in children's literature past and present, making one sensitive to racial, ethnic, gender, and religious stereotyping.
- ✦ Understand the various age groups and reading levels for children.
- ✦ Apply a sense of child psychology and childhood development to an analysis of children's literature.
- ✦ Develop criteria for evaluating the role of illustration in books for children.
- ✦ To explore children's literature and adolescent literature as a means of learning about diverse cultures; to distinguish between children's literature which makes blatant appeals to the popular myths of a culture and that which achieves more subtle examinations of moral and social issues.
- ✦ To learn to evaluate the literature for young people by the same literary and artistic considerations that can be brought to all serious literature.
- ✦ To become aware of the psychological, social, and moral implications of children's and adolescent literature.
- ✦ To understand the critical and creative aspects of writing as process: toward this goal, to learn to work effectively in writing groups.
- ✦ Through our reading, to gain insight into the nature of the individual, most frequently in this class the child or adolescent, and the relationship between that child and the community.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.


☎ 2262 0661/65

Course Schedule

SESSION	TOPIC	COURSEWORK	DURATION
1.	Introduction	<ul style="list-style-type: none">❖ General Orientation❖ Theories of childhood: cultural, historical, psychological, and philosophical perspectives❖ Instruction or Delight? Nature and Purpose of Children's Literature❖ Myth and folktales used in Children's literature, its nature and dissemination	2hrs
2.	Visual Culture and Storytelling	<ul style="list-style-type: none">❖ Picture books: use of images in Children's books❖ Images taking on the narrative role❖ Changing meanings and perceptions in Image oriented books for children❖ The art of storytelling and its impact on Children's understanding of narratives and stories❖ Use of costumes and audiovisual sets in storytelling	2hrs
3.	Gender and Translation	<ul style="list-style-type: none">❖ Separate books for young boys and girls❖ Changing fairytales❖ How young people's worlds are constructed differently in gender oriented storybooks for children❖ Fictional techniques used to present ideologies in Children's Literature❖ Translation as a process of cross cultural transition of Children's texts	2hrs



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

4.	Poetry, Performance and Imagination	<ul style="list-style-type: none">❖ Children's poetry: how to children associate with a complex genre❖ Storytelling as performance + films❖ Debates on how Childhood and children are represented to the child viewers and adult audiences❖ Fantasy v/s non fictional literature for children	2hrs
5.	Cultural Pluralism and Contemporary trends in Children's Literature	<ul style="list-style-type: none">❖ Changes and continuities in the mood and tone of Children's literature over the years in response to different anxieties and concerns❖ Reading or discussing children's literature from multicultural/ critical lenses❖ Media mix from print to electronic in which literature is experienced and the markets through which it is distributed and consumed❖ Writing for children: Supervised workshop in the craft and techniques of writing picture books, short stories, longer fiction and nonfiction for kids	2hrs

Recommended Reading

1. Donna E. Norton and Sandra E. Norton. *Through the Eyes of a Child: An Introduction to Children's Literature*. 8th edition (Boston: Pearson Allyn & Bacon, 2011) ISBN-10: 013702875X
2. *Harry Potter and the Sorcerer's Stone* by J.K. Rowling (Paperback, Scholastic, ISBN 0-590-35342X)
3. *You Can Write Children's Books* by Tracey E. Dils (Paperback, Writers Digest Books; ISBN: 978-1582975733)



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinda

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)


5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

4. *The Frog Prince Continued* by Jon Scieszka (Paperback, Penguin Books, ISBN 014-054285-X)
5. *Olivia* by Ian Falconer (Board Book, Atheneum, ISBN: 978-0-689-87472-7)
6. *Where the Wild Things Are* by Maurice Sendak (Paperback, HarperTrophy; ISBN: 0064431789)
7. *Emma's Rug* by Allen Say (Paperback; Walter Lorraine Books; ISBN 0-618-33523-4)
8. *The Giving Tree* by Shel Silverstein (Hardcover, HarperCollins, ISBN 978-0060256654)
9. *Edwina the Emu* by Sheena Knowles (Paperback, HarperTrophy, ISBN 978-006-4434836)
10. *The Man Who Walked Between Towers* by Mordicai Gerstein (Paperback, Square Fish, ISBN 978-0312368784)
11. *Classic Myths to Read Aloud* by William F. Russell (Paperback, Broadway Books, ISBN 978-0517588376)
12. *James and the Giant Peach* by Roald Dahl (Paperback, Penguin USA (Paper); ISBN: 0140374248)
13. *The Giver* by Lois Lowry (Paperback, Laureleaf; ISBN: 0440237688)
14. *Children's Writer's Word Book* by Alihandra Mogilner (Paperback, Writer's Digest Books, ISBN 0-89879-9511) - The right words when you're polishing your story for kids.
15. *Children's Writer's & Illustrator's Market 2011* (Paperback, Writer's Digest Books, ISBN 978-1582979526) - Needed if you want to make a living in children's books.
16. *The Skull Alphabet Book* by Jerry Pallota (Paperback, Charlesbridge Publishing, ISBN 0881069159) - One of the great illustrated books.
17. *The Middle-Aged Man and the Sea* by Christopher Meeks (Paperback, White Whisker Books, ISBN 978-0615249179)



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
☎ 2262 0661/65

TRAVEL WRITING

VANI ZAVERI

Email: vani.zaveri@gmail.com

Mobile no.: +919819691601

Centuries ago, humans first started travelling for reasons of commerce, conquest, or religion, and the letters, diaries, and treatises they wrote are among the first examples of travel writing. Today our motives for travel are rather different, but many of us still feel the urge to seek out new landscapes and to share our discoveries through writing. This course aims at perfecting all the nuances and fine details of the new age travel writing genre and enhancing the student's ability to put into words what usually ends up as just a visual memory of a destination.

Course Overview

This course offers an introduction to the different forms of travel writing and will guide the students in crafting their own travel essay—a nonfiction, first-person narrative that will be taught in the style of blogging and via contemporary social media platforms. Students will read and analyze successful travel writing by today's best writers (and a few historical examples), engage in writing exercises designed to inspire passionate writing about their favourite places, and learn more about the publication process.

Using published travel narratives as frames for discussion, this class will also examine the art of travel writing and help students to understand the process of gathering research on the road, turning their travel journals and memories into crafted works, and eventually pitching their writing for publication. Each class session involves readings, discussion, and writing exercises to encourage spontaneity and passion in the student's storytelling.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinda
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Course Objectives/Learning Objectives

At the end of this course, students will:

- ❖ Have an enhanced understanding of the genre of travel writing, a familiarity with some of the major writers of the genre, and a sense of what makes great travel writing successful.
- ❖ Complete one travel essay of their own for future refinement and possible submission.
- ❖ Recognize what works well and what doesn't in peer writing and be able to articulate respectful, constructive feedback.

Course Schedule

Session	Topic	Coursework	Duration
1.	Introduction	<ul style="list-style-type: none">❖ General Orientation❖ History of Travel Writing❖ Types of Travel literature❖ Print culture and the spread of travel writing.❖ Fact v/s Fantasy in travel narratives	2hrs
2.	Creation: Travel Writing	<ul style="list-style-type: none">❖ What is good travel writing+ examples❖ Blogging vs. Travel Blogging❖ How do we capture the particular spirit of a place?❖ What makes travel blogging different from travel books, guides and fictional works	2hrs
3.	Crafting & Structure	<ul style="list-style-type: none">❖ Compelling beginnings and endings: Where do we start and end? How to transition?❖ Building themes and a narrative	2hrs



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shankar
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

		structure: what makes a travel narrative feel whole? ❖ Bringing your story to life & Drawing characters from real life: how can we reproduce memorable characters?	
4.	Finding your story	❖ Exercises in enlivening your writing ❖ Elements of style - use of first person, developing your voice ❖ Rewriting and self-editing ❖ The qualities of a good travel writer - use of vivid language, voice, tone	2hrs
5.	Critical Explorations	❖ Post colonial travel writing ❖ Gendered writing: critique ❖ A Marxist perspective ❖ Popular culture and Travel blogs	2 hrs

Recommended Reading List

{These are suggestions for further reading on your own}

- ❖ Give Me the World by Leila Hadley
- ❖ The World: Travels 1950-2000 by Jan Morris
- ❖ The Happy Isles of Oceania by Paul Theroux
- ❖ In Patagonia by Bruce Chatwin
- ❖ Four Corners: A Journey into the Heart of Papua New Guinea by Kira Salak
- ❖ Down the Nile: Alone in a Fisherman's Skiff by Rosemary Mahoney
- ❖ Fast Times in Palestine by Pamela Olson
- ❖ The Blind Masseuse by Alden Jones
- ❖ Wild by Cheryl Strayed
- ❖ A Supposedly Fun Thing I'll Never Do Again by David Foster Wallace
- ❖ Tracks by Robyn Davidson
- ❖ Finding George Orwell in Burma by Emma Larkin



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Blinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

- ❖ Country Driving: A Chinese Roadtrip by Peter Hessler
- ❖ Catfish and Mandala: A Two-Wheeled Voyage Through the Landscape and Memory of Vietnam by Andrew Pham
- ❖ Don't Let's Go to the Dogs Tonight by Alexandra Fuller
- ❖ My Life in Paris by Julia Child
- ❖ The Bookseller of Kabul by Asne Seierstad
- ❖ The Places in Between by Rory Stewart
- ❖ A House in Fez by Suzanna Clark
- ❖ The Geography of Bliss by Eric Weiner
- ❖ Me Talk Pretty One Day by David Sedaris
- ❖ The Sweet Life in Paris by David Lebovitz
- ❖ Italian Neighbors by Tim Parks



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF PSYCHOLOGY

Research Paper Writing and Presentation at Khandala Seminar on
Individual and Group Differences
Honours 2 Credit Activity 2018-2019


Course Write -up

- This is a voluntary activity that psychology students of fy, sy and ty can enrol for. Work begins in August and culminates in January.
- A broad theme is agreed upon after brainstorming with students. Each student chooses a specific topic (within that theme) to write their seminar paper on.
- They receive a two hour initial training on how to decide on specific topic for their seminar paper. They are taught basic research and reference skills. Then students need to work on their own time (involving more than 15 hours of work, usually during the diwali vacation) to create a literature review and outline for their paper.
- They will consult with the teaching staff (they have chosen as their guides) to organize and refine their written paper to be submitted. Final year students who have had experience with this activity are also available to mentor the students doing this for the first time.
- Enrolled students also receive one hour training on effective presentation skills before the seminar.
- The presentation happens in front of a group of peers and staff at the annual Khandala seminar that spans one and a half days (and includes around 15 contact hours of work at Khandala). This entails presentation of one's own paper and attending and giving feedback on others' papers.

Page 1 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

- There are numerous **advantages** to such an activity as a learning experience for both the student presenters (who learn about research skills and presentation skills) and the student audience (who learn by observing both good and average presentations).
- There is a specific kind of set induction for this seminar which results in a sense of meaningfulness, interest and enthusiasm on the part of students.
- A mastery orientation rather than a performance orientation is encouraged. Everyone learns to give honest, constructive feedback according to specific criteria provided related to the content and style of presentation.
- The final grade on the certificate given by the department takes into account the effectiveness of the presentation, the quality of the written paper and collated audience feedback.
- Using feedback obtained from students over the years, this paper takes a critical look at the **strengths and challenges** of such an activity, from a pedagogical point of view.
- The **presentation sessions** last 45 minutes each with 30 minutes for the speaker and 15 minutes for audience interaction, discussion and feedback.
- Since PPTs are not used, students are encouraged to know their content thoroughly and to find other creative ways of enhancing their presentation and holding the attention of their peers.

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF MANAGEMENT STUDIES

Technical Analysis Of Stocks
Honours 2 Credit Activity 2018-2019

Course Content

- Difference between Technical & Fundamental Analysis
- Understanding of important financial terms & categorization of stocks
- Candlestick patterns
- ❖ Important Reversal & Continuation Patterns with extremely profitable trading strategies like:
 - 1) Engulfing patterns
 - 2) Hangman
 - 3) Spinning Top
 - 4) Shooting star
 - 5) Inverted Hammer
 - 6) Piercing & Dark cloud Cover
 - 7) Harami Patterns
 - 8) Star patterns
 - 9) Tower Top & Bottoms
 - 10) Dumpling top & Frypan Bottoms
 - 11) Shaven Top & Bottom
 - 12) Doji
 - 13) Counterattack Lines
 - 14) Hammer etc.
 - 15) Use of Momentum Indicators to successfully identify trend reversals



Page 1 of 2

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

- 16) RSI
- 17) Volume Analysis
- 18) Moving Average (EMA)
- 19) Moving Average Convergence Divergence (MACD)
- 20) Bollinger bands
- 21) Stochastic Oscillator
- 22) Parabolic SAR
- 23) Application of techniques with candlestick patterns
- 24) Identification of your trading style based on your risk taking ability

Practical training

Total number of classroom training: Lectures + Practical training (18 hrs + 12hrs assignment)


Total number of training hours: 30 hrs

❖ **Mode of Evaluation:** Report writing on the Training Modules

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

PG DEPARTMENT OF BIOTECHNOLOGY

Embryonic tissue culture: A Primer for Animal Cell Culture techniques
Honours 2 Credit Activity 2018-2019

Animal cell culture technique is an integral part of modern biotechnology laboratories. The technique is relevant in experiment designs of molecular biology, developmental biology, virology, immunology, bioprocess technology, drug screening and efficacy testing, among others.

The objective of this short training course for undergraduates is to provide them with hands on technical experience and critical reasoning skills to independently perform cell culture experiments.

Hands-on training in cell culture techniques using chick embryo tissues in an animal cell culture laboratory set up.

Course Content

- Practical aspects of cell culture
- Understand the layout of the laboratory, handling of instruments and equipments
- Aseptic technique for contamination free cultures
- Maintenance of cell culture environment
- Primary culture using embryonic tissue
- Methods for measuring viability
- Characterisation of cultured cells
- Maintenance of cells in culture



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

PG DEPARTMENT OF BIOTECHNOLOGY

“Finding Hidden Messages In Biomolecules”: Bioinformatics Approach
Honours 2 Credit Activity 2018-2019

Course Content

❖ Introduction

Hands on practical sessions combined with theory sessions, aims to determine the role of computers in decoding the messages in DNA and proteins. After completion of this course students will be able to understand basic utilization of computational tools for answering some biological and chemical based problems.

❖ The course will include

- Introduction to the biomolecules
- A detailed exploration of various biological databases
- Analysis of biomolecular data using various tools like BLAST, Clustal Omega, Rasmol, Swiss Model, and others.
- A detailed practical session on in silico experimentation of biological and chemical science.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Blinda
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

PG DEPARTMENT OF BIOTECHNOLOGY

Bioinformatics: Solution to the Biological Problems

Honours 2 Credits activity 2018-2019

Course Content

Modern biology involving high-throughput techniques for data generation and analysis have made familiarity with basic bioinformatics concepts a necessity in the biological sciences. There is a constant need for Undergraduate students to attain training in bioinformatics methods to find solutions for biological problems.

The objective of the course for UG Science students is to familiarize them with basic tools and methods in Bioinformatics using project -based learning methodology.

The course includes

- An **induction session** on bioinformatics for the students without any bioinformatics background.
- Utilization of various bioinformatics/computational tools in answering the question of biological sciences.
- The module will be a lecture cum practical sessions.
- The students will be trained to design a biological based question/problem in the initial classroom session.
- Use of different computational biology tools to solve the problem.
- Areas of protein study, basic molecular biology and biochemistry.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Morphology And Identification Of Fruits & Vegetables

Honours 2 Credits Activity 2018-2019

Course Content

The aim of this activity is to develop plant identification skill in students. It will motivate participants in taxonomical identification of the plants used on a daily basis eg. Fruits & vegetables.

- Basis of plant taxonomy
- Morphology of fruits
- Identification of some local fruits
- Field trips to whole sale vegetable market, collection and identification of fruits (Min. 20)
- **Evaluation:** Written report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Extraction Of Oils From Botanical Samples
Honours 2 Credits Activity 2018-2019

Course Content

Objective: The goal of the course is to develop instrumentation skill in students.

Oil can be extracted from plant materials in various ways.

Project involves

- Products derived from botanicals
- Oil and types of oils from plants
- Extraction of oil from leaves as well as peels of different plant materials
- Assembling of oil distillation unit
- Run extraction protocols
- Min.3 plant material used for extraction.

Evaluation

On the basis of their skill for setting up the apparatus, harvesting of the essential oil and written report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Open Ended Project

Phylogenetic Tree Of The Chitinase Enzyme Present In Various Plants Using FASTA
Code

Honours 2 Credits Activity 2018-2019

Course Content

The prime aim of this project is to develop Bioinformatics research skills.

FASTA format is a text-based format for representing either nucleotide sequences or peptide sequences, in which base pairs or amino acids are represented using single-letter codes. A sequence in FASTA format begins with a single-line description, followed by lines of sequence data.

Project involves

- Introduction to Bioinformatics
- Basic of phylogeny
- Significance of FASTA code
- FASTA codes are retrieved for many plants, by the help of online softwares
- Creating a phylogentic tree of the chitinase enzyme

Mode of Evaluation

Written project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Conserving Artefacts: A Chemical View
Honours 2 Credits Activity 2018-2019

Course Content

❖ Introduction

Chemistry plays an essential role in conservation of art and artefacts. The course includes lecture series followed by hands on experience on simple artefacts.

❖ Topics to be covered

- Introduction to Conservation
- Factors causing deterioration of art/artifacts
- Conservation verses Restoration
- Multispectral imaging techniques for identifying damage and restoration.
- Hands-on sessions on conserving metal artifacts and stone carvings.

❖ Assessment method: Project Report



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Research Project Metal oxide semiconductors as effective photocatalyst: pros and cons
Honours 2 Credits Activity 2018-2019

Course Content

❖ Introduction

Metal oxide semiconductors have proved to be effective photocatalysts and hence are in great demand specially in waste water treatment. To label this treated water as potable, it needs to be analyzed extensively in terms of its potency as well as various other factors.

❖ Project work

- Synthesis of metal oxide semiconductors
- Characterisation of metal oxide semiconductors
- To test its use as effective photo-catalysts for treating waste water
- Analyzing its toxicity.

❖ Assessment method: Project Report



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Complex Chemistry
Honours 2 Credits Activity 2018-2019

Course Content

❖ Introduction

Schiff bases are aldehyde- or ketone-like compounds in which the carbonyl group is replaced by an imine or azomethine group. They are widely used for industrial purposes and also exhibit a broad range of biological activities.

❖ Project work

- Synthesis of Schiff bases
- Preparation of complexes using different metals
(Reaction of Schiff bases with different metals to form complexes)
- Characterization of both Schiff bases as well as complexes using Melting point, Thin layer chromatography and chemical methods.

❖ Assessment method: Project Report



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Research Project in Food and Environmental Chemistry
Honours 2 Credits Activity 2018-2019

Course Content

- ❖ The prime aim of this project was to study and evaluate different aspects of food and environmental chemistry from perspective of safety and wellbeing of mankind.

The project includes two parts:

Water analysis and Food analysis

❖ Water analysis:

- All the essential parameters (According to The Environmental Protection Agency Act, 1992) to be studied.
- Collection of Water samples from the different parts of Mumbai
- Standardization and analysis of various methods for these samples
- **Parameters for all the water samples to be tested in laboratory**
- Acidity
- Alkalinity
- Salinity
- Dissolved Chlorine
- TDS
- Sulphate content
- COD, BOD, DO,
- Nitrite Content and Fe Content.
- **Comparative study of different samples of water**

Page 1 of 2

H. K. K. K.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

❖ Food analysis:

- The main objective is to do the Comparative Study and Qualitative Analysis of Different Brands of Cold Drinks Available in Market.

- For the analysis purpose five different brands of cold drinks namely, Coke, Pepsi, Sprite, Fanta and AppyFizz will be studied.

- **Instrumental and non-instrumental methods to study.**

- **Parameters to be studied for analyzing cold drinks samples**

- pH

- Carbon dioxide

- Glucose, phosphate (Instrumental and Non-Instrumental Method)

- Alcohol, and Sucrose content.

- **Comparative study of all cold drink samples**

❖ **MODE OF EVALUATION:** Written Project Report

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Workshop: Applications of Chem-Draw- A tool in Chemistry
Honours 2 Credits Activity 2018-2019

Course Content

☐ Introduction

ChemDraw is a software which enables user to edit molecule, make structures, and formulate reactions. The drawing of chemicals structures and reaction schemes is a repetitive task for all the chemists at all levels of education.

While hand-sketching is generally used for presentation, journals, etc. these ways aren't neat and making in symmetry is difficult. Hence to make structures, several computer softwares are used, one of the most efficient software being ChemDraw. ChemDraw is available for Windows as well as MAC.

☐ Topics to be covered in the course

- Chem Draw basics
- Drawing techniques
- Analysis tools
- Drawing chemical structures
- Captions and atom labels
- Orbital's symbols and other shapes
- Use of TLC plate tool
- Prediction of ^1H NMR and ^{13}C NMR
- Drawing reactions and their mechanism
- Sharing ChemDraw information.

☐ Assessment method: Test



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Research Methodology And Analytical Techniques (Basic)

Honors' 2 Credits Activity for 2018-19

offered by

Caius Research Laboratory

Course Content

Description: The course involves introducing students to Design of Experiment and application of analytical techniques to research.

The course will involve the following:

1. Introduction to good laboratory practice and safety in lab
2. Introduction to concepts of research
3. Calibration of micropipette
4. Testing accuracy of pipetting and use of UV Spectrophotometer
5. Concept of Mole and preparation of solutions
6. Microscopy: Understanding Light binocular microscope-Bright Field polarising phase contrast microscope
7. Histochemical Localisation and Analysis of different Biomolecules in a Cell using different samples like seeds
8. Understanding enzyme assay – assay of Urease from Different sources
9. Partial purification by ammonium sulphate precipitation
10. Effect of Different Metal ions on the Activity of Urease Enzyme.

Evaluation: Continuous evaluation and report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honors' 2 Credits Activity for 2018-19

offered by

Caius Research Laboratory

Research Methodology And Analytical Techniques (Advanced)

Gene Cloning and Protein Crystallisation

Course Content

Description: The course involves introducing students to concepts and techniques of Gene Cloning and genomic DNA library preparation and techniques of Protein crystallisation.

The course will involve the following:

1. Isolation of Genomic DNA from *E.coli*
2. Isolation of plasmid DNA – pUC19
3. Agarose gel electrophoresis of DNA
4. Restriction Enzyme digestion of DNA (Genomic and Plasmid DNA)
5. Preparation of recombinant Plasmid by ligation
6. Preparation of competent cells and transformation
7. Replica plating techniques
8. Crystallisation of protein- Goat liver catalase with different solvents
9. Microscopy techniques: Observation of protein crystals

Evaluation: Continuous evaluation and report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity

2018-2019

Estradiol-mediated Development of Retina in Chick Embryo System

Course Content

Description:

Students will get an opportunity to familiarize themselves with vertebrate model organisms and understand gross morphological milestones in development during embryogenesis. Estradiol which is primarily a gonadal steroid is also known to be synthesized in the brain. Recent reports indicate a role for estradiol in neural development and generations of neurons. The chick embryo retina offers an easily accessible model system to study the role of this steroid on neurogenesis.

The course will involve the following:

- Exposure to Research Methodology
- Working with fertilized eggs and chick embryos
- Design experiments to study Estradiol-mediated neurogenesis in the developing chick embryo system
- Morphological observations of control (untreated) and treated chick embryos and assessing effects on day 3, 4 and 5 of development by histological and biochemical techniques.
- Report writing

Evaluation: Continuous laboratory work evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity

2018-2019

Mapping the Microscopic Biodiversity using Paper Microscope 'Foldscope'

Course Content

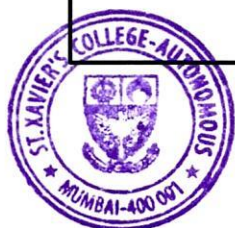
Description:

Students will work on a Department of Biotechnology (DBT), Government of India, funded-project to study and map biodiversity using Foldscope- a paper microscope


The course will involve the following:

- Exposure to Research Methodology
- Field visits for collection of samples from different ecological niches such as national park or nature parks in Mumbai
- Use paper microscopes called 'Foldscopes' to photo-document the diversity microscopic flora
- Laboratory studies on soil and water analysis to complement field studies
- Report writing

Evaluation: Continuous laboratory work evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF MICROBIOLOGY

Animal tissue culture

Honours 2 Credits Activity 2018-2019

Course Content

❖ Introduction

Animal tissue culture is a major tool in basic research as well as in modern medicine. Some of the important areas in which cell culture plays a key role are cancer research, toxicity testing, virology, immunology, cytogenetics, stem cell biology, drug screening and gene therapy. The workshop is designed to provide a thorough understanding of this technique through theory sessions and laboratory exercises.

❖ Topics to be covered

The course will focus on practical aspects, such as design and layout of the cell culture laboratory, aseptic techniques, media preparation, methods for measuring viability, sub-culturing, cryopreservation, revival and cytotoxicity.

The course will focus on practical aspects of Animal Tissue Culture.

- ✦ Design and layout of the cell culture laboratory
- ✦ Aseptic techniques and media preparation
- ✦ Revival of cryopreserved cells
- ✦ Methods for measuring viability
- ✦ Sub-culturing and cryopreservation,
- ✦ Cytotoxicity assays.
- ✦ Primary culture of chick embryo fibroblasts

❖ **Mode of Assessment:** Written exam on practical aspects of the course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



St. Xavier's College (Autonomous) -
Mumbai

Syllabus For
**DIPLOMA IN FORENSIC SCIENCE
& CRIMINAL LAW**



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

DIPLOMA IN FORENSIC SCIENCE AND CRIMINAL LAW

Learning Objectives of the Diploma in Forensic Science and Criminal Law:

- To provide an introduction and orientation to the functioning of the Indian Criminal Justice delivery system, and the role forensic science plays in this process.
- To hone the basic skills necessary for forensic science investigations.
- To develop a critical understanding of the diverse institutions of 'crime' control.
- To demonstrate competency in the collection, processing, analyses, and evaluation of evidence.

Learning Outcomes of the Diploma in Forensic Science and Criminal Law:

- Should be able to demonstrate competency in the principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence.
- Should be able to demonstrate an understanding of the scientific method and the use of problem-solving within the field of forensic science.
- Should be able to identify the role of the forensic scientist and physical evidence within the criminal justice system.
- Should be able to demonstrate the ability to document and orally describe crime scenes, physical evidence, and scientific processes.
- Should be able to identify and examine current and emerging concepts and practices within the forensic science field.

Course Units and Credits

SEMESTER	UNIT NO	UNIT NAME	CREDIT POINTS
1	SXC-DFSCCL-01	The Basics of Crime Scene Investigation	4
1	SXC-DFSCCL-02	Ethics and Research Methods in Forensic Science	4
1 & 2	SXC-DFSCCL-03	The Functioning of the Indian Judicial System: Crime Scene to Court Room	4
2	SXC-DFSCCL-04	Impression Evidence	4
1	SXC-DFSCCL-05	Introduction to Forensic Serology	4
2	SXC-DFSCCL-06	Forensic DNA Analysis	4
2	SXC-DFSCCL-07	Microbial Forensics and Forensic Immunology	4
1	SXC-DFSCCL-08	Forensic Toxicology and Medicine	4
1 & 2	SXC-DFSCCL-09	Emerging Trends in Forensic Science	4
1 & 2	SXC-DFSCCL-10	Research Case Study and Moot Court	6

©Department of Zoology, St. Xavier's College



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Page 2 of 8
[Signature]
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

UNIT 1

➤ THE BASICS OF CRIME SCENE INVESTIGATION (10 lectures)

An introduction of the application of science to solving crime

- Definition, Specializations in Forensics, Basic structure of Forensic Labs in India
- Mechanics of Justice and the Justice Triangle
- Locard's Exchange Principle
- Concepts of Identification, Individualization, Classification, Exclusion, Evidential Value
- Types of Physical evidence
- Processing & Investigation
- Defining the crime scene; Basic processing methodology
- Evidence recognition
- Documentation techniques
- Packaging, storage and transportation of evidence
- Control Samples, Scientific and Legal integrity of evidence

➤ Assessment Modalities

- Mock Crime Scene Practical (30%)
- Assignment (20%)
- Mock Test (10%)
- End of Unit Examination (40%)

UNIT 2

➤ ETHICS AND RESEARCH METHODS IN FORENSIC SCIENCE (12 lectures)

There are three interrelated modules

- Ethics in Forensic Science – the necessity for a professional ethical code in the practice of forensic science and describes the ethical conflicts that can arise when working in this profession.
 - Introduction to Quality, Competency & Ethics
 - Quality Control and Quality Assurance
 - Laboratory Standards; Accreditation and Certification
 - Quality of an Individual
 - Ethics in Forensic Science
- Research Methods in Forensic Science – the relevance and application of the scientific method in modern forensic science, including formulating research questions, applying the appropriate research methodology and making recommendations based on the analysed result.
 - Various components of the Scientific Method
 - Effective scientific communication through scientific writing and oral presentations
 - Critical Analysis of a Forensic Case Study





Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Application of Statistics in Forensic Science –the use and interpretation of statistics as a tool in analysing forensic data.
- **Assessment Modalities**
 - Class Debate – Group based Activity (20%)
 - Forensically Applicable Statistics Assignment (10%)
 - Literature Review (15%)
 - End of Unit Examination (50%)
 - Attendance (5%)

UNIT 3

- **THE FUNCTIONING OF THE INDIAN JUDICIAL SYSTEM: CRIME SCENE TO COURT ROOM** (15 lectures)
An examination of the nature and purposes of criminal law along with the basic elements of criminal offences.
 - Understand how a FIR and Panchnama are filed
 - The hierarchy of the Court system in India
 - Basic elements of an offence and their analysis
 - Process of a Criminal Trial– from arrest of the suspect to sentencing
 - The role of the forensic scientist as an expert witness
 - Admissibility of forensic evidence
- **Assessment Modalities**
 - Assignment on the application of relevant laws to a mock case scenario (20%)
 - Mock Tests (20%)
 - End of Unit Examination (50%)
 - Attendance (10%)

UNIT 4

- **IMPRESSION EVIDENCE** (12 lectures)
An outline of how markings are produced when one object comes into contact with another, leaving behind some kind of indentation or print known as impression evidence. Such evidence encountered includes footwear impressions, tyre marks, and markings created by tools and similar instruments.
 - Introduction to Fingerprints and Biometrics
 - Basic principles of fingerprint analysis, comparison and identification
 - Introduction to biometric systems of identification
 - Introduction to Firearms and Ballistics
 - Parts and Types of firearms, mechanism of firing a weapon
 - Forensic evidence left at the crime scene
 - Reconstruction of crime scenes involving firearms
 - Introduction to Other Impression Evidences
 - Questioned Document Examination & Signature Verification





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Explain the forensic significance of class and individual characteristics to the comparison of tool mark, footwear, and tire impressions

➤ **Assessment Modalities**

- Fingerprint Practical (15%)
- Questioned Document Practical (15%)
- End of Unit Examination (60%)
- Attendance (10%)

UNIT 5

➤ **INTRODUCTION TO FORENSIC SEROLOGY** (10 lectures)

The application of the study of blood, semen, saliva and other body fluids, to legal matters.

- Body fluids found at crime scenes
 - Introduction to body fluids; related crime scenes
 - General crime scene processing methodologies
- Blood
 - Composition; Basic blood genetics
 - Forensic analysis of blood evidence
 - Blood spatter analysis – blood flight characteristics, types of BSP, crime scene reconstructions
- Semen and Sexual Assault Cases
 - Composition of semen; sexual assault and rape crime scenes
 - Examination of the victim
 - Forensic analysis of semen stains
- Other Body Fluids
 - Forensic analysis of Saliva
 - Forensic analysis of Urine

➤ **Assessment Modalities**

- Blood Spatter Practical (15%)
- Body Fluids Practical (15%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 6

➤ **FORENSIC DNA ANALYSIS** (15 lectures)

The basics of cell biology and DNA analysis, and its application to investigations and the judicial system. Special reference is made to the application of forensic DNA technology to prosecutions, defences and exonerations.

- DNA – definition, importance, sources, types of crime scenes; historical perspective
- Short Tandem Repeats; Low copy number DNA; Y chromosomal analysis; Mitochondrial DNA
- CODIS – Combined DNA Index System





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science, St. Xavier's College (Autonomous) - Mumbai

- DNA evidence processing – Collection, Extraction, RFLP v/s PCR, Separation techniques, Output data interpretation
 - Problems in DNA Analysis: Mixtures of DNA
 - Paternity Testing- Genetic Systems used for Paternity Tests
 - Statistics & Population Genetics – Hardy Weinberg Equilibrium
- **Assessment Modalities**
- Power point Presentation (25%)
 - Mock Tests (15%)
 - End of Unit Examination (60%)

UNIT 7

- **MICROBIAL FORENSICS AND FORENSIC IMMUNOLOGY (15 lectures)**
Microbial Forensics combines principles of public health epidemiology and law enforcement to identify patterns in a disease outbreak, determine which pathogen may be involved, and trace the organism to its source.
- Differences between Bio crimes and Bioterrorism
 - Biosecurity & Microbial Forensics – types of biological agents, collection, preservation and analysis of these biological agents during investigation
 - Management of biological threats – evaluate biosecurity threats and implementation of resolution through microbial forensics analytical techniques
- **Assessment Modalities**
- PowerPoint Presentation (25%)
 - Assignment (10%)
 - Mock tests (10%)
 - End of Unit Examination (50%)
 - Attendance (5%)

UNIT 8

- **FORENSIC TOXICOLOGY AND MEDICINE (15 lectures)**
There are three interrelated modules
- Forensic Toxicology – an introduction to toxicological samples, including their presumptive and confirmation testing in a variety of biological materials. A comprehensive, pharmacological and analytical review of some major alcohol and drug classes is taught.
 - Forensic Medicine – an overview of the protocols of the mortuary and crime scene, the medico-legal autopsy and post-mortem changes relevant to the solving of a crime.
 - Forensic Anthropology & Odontology – how information gathered from skeletal and dental materials can be used to determine the age, sex and stature of an individual, while providing evidence of pathology and/or trauma.
- **Assessment Modalities**
- Class Discussion related to Forensic Medicine (10%)





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Toxicology Practical (20%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 9

➤ EMERGING TRENDS IN FORENSIC SCIENCE (15 lectures)

Advances in technology as well as society's growing dependence on technology have changed the way in which crime is investigated and the types of crimes committed, with a notable increase in cybercrime offences.

- Cyber Crime Investigation
 - Understanding cyber forensics
 - Cyber Law
 - Electronic crime scene investigation (electronic evidence; internet; networks)
 - Digital Privacy
 - Types of cyber crime
- Integrating forensic techniques into incident response
- Recent advances - forensic accounting, forensic engineering, forensic psychology

➤ Assessment Modalities

- Cyber Forensics Practical (20%)
- Forensic Psychology Practical (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 10

➤ RESEARCH CASE STUDY AND MOOT COURT (15 lectures)

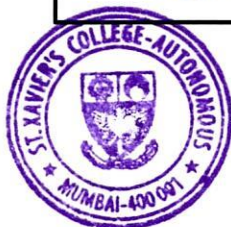
Independent research into a topic in the field of forensic science supported by lectures taught during the course. Students are trained to give scientific expert witness testimony in their chosen topics.

➤ Assessment Modalities

- Literature Review (20%)
- Case Study Research Report (40%)
- Moot Court (40%)

Practical Course:

1. Investigation and Processing of a Mock Crime Scene
2. Questioned Document Examination
3. Fingerprint Processing, Analysis and Identification
4. Blood Spatter Analysis on various surfaces
5. Body Fluids Analysis – saliva and blood
6. Toxicological Analysis of Drugs using Thin Layer Chromatography





ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
© 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

Recommended References:

- Casey, E. (2011). *Digital evidence and computer crime: Forensic science, computers, and the internet*. Academic press.
- Houck, M. M., & Siegel, J. A. (2009). *Fundamentals of forensic science*. Academic Press.
- Fisher, Barry, A. J., Tilstone, W. J. & Woytowicz, C. (2009). *Introduction to Criminalistics: The Foundation of Forensic Science*. Elsevier Academic Press.
- Robertson, B., Vignaux, G. A., & Berger, C. E. (2016). *Interpreting evidence: evaluating forensic science in the courtroom*. John Wiley & Sons.
- Saferstein, R. (2013). *Criminalistics*. Pearson Education.

#####





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

Evolution


Honours 2 Credits Activity 2018-2019

Course Content

- Evolution is only a THEORY [2 L]
- Concepts of: Natural selection, mutation, genetic drift, Variation [4 L]
- Patterns of Evolution: Convergent and Divergent evolution, Punctuated equilibrium, Clades and their forms [4 L]
- Evidences of Evolution: From Physiology, from Anatomy, from genetics, from cytology, from Molecular Biology (Genomic Evolution), from Palaeontology (Fossil Record) [7 L]
- Evolutionary Biogeography (Influence of factors on Geographical distribution) [2 L]
- The Human Story (Human Evolutionary Tale) [2 L]
- Intelligent Design/Creationism - a credible theory? [2 L]
- Arguments against evolution – Debunked [2 L]
- Applications of Evolution [3 L]
- Final test [2 L]



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

Basics Skills For Wildlife Filmmaking
Honours 2 Credits Activity 2018-2019

Course Content

The aim of the course is to introduce the students to understand practices involved in wildlife film production, how to combine the ends of science and media to create films that are successful, how to be meaningful to both the entertainment industry and the cause of wildlife and scientific learning.

Content

- Basics of Scriptwriting
- Basic camera theory in respect to wildlife filmmaking.
- Various methods of research for wildlife films
- Incorporating science into storytelling for wildlife
- Various camera techniques
- Challenges linked to wildlife filming.
- Wildlife laws and ethics regarding wildlife filmmaking
- Editing, Compositions, Auditory track incorporation
- Field trips for: Basic camera techniques, Field Recce of target location, Filming a sequence

Mode of Assessment

Students based on their choice, will create their own 1- minute long wildlife action sequence or a production report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

**5, Mahapalika Marg, Mumbai - 400 001,
INDIA.**

☎ 2262 0661/65

2017 - 2018



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

STUDY OF EPIGRAPHY AND NUMISMATICS OF INDIA

o **Objective:**

- This is a course deals with development of the study of scripts and coinage in ancient India which enable a student to utilise the sources to reconstruct the past. The course will be dealt with the help of Literary, Archaeological, Numismatic and Epigraphic evidences for a holistic view of the facets of Indian culture.

o **Content:**

- Introduction to Epigraphy
 - o Aims, scope and definition of epigraphy
 - o Origin and development of different scripts with special reference to Indus script, Brahmi, Kharoshthi
 - o Indian eras (Shaka, Vikrama, Gupta, Chedi-Kalchuri)
- Ancient Indian Scripts
 - o Brahmi
 - o Kharoshthi
 - o Persian
 - o Introduction to post-ancient scripts for referencing and development of these ancient Indian scripts
- Introduction to Numismatics
 - o Aims, scope and definition of numismatics
 - o Medium of exchange
 - o Techniques of manufacturing
- Coinage
 - o Janapada (PMC & EUCC), Indo-Greek-Parthian- Scythian
 - o Western Ksatrapas, Kushan, Satavahana, Tribal coins
 - o Gupta, Pallavas, Chola and Cheras
 - o Delhi Sultanate and Greater Mughal Coins

Bibliography:

1. Allan, J. 1935. Catalogue of Coins of Ancient India. London: British Museum.
2. Allchin, F.R. and K.R. Norman. 1985. "Guide to the Ashokan Inscriptions". South Asian Studies.

Certificate Course

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

3. Altekar, A.S. 1957. Coinage of the Gupta Empire. Varanasi: Numismatic Society of India.
4. Epigraphia Indica Vols. I-X.
5. Gupta, P.L. 1979. (2nd Revised Edition) Coins. New Delhi: National Book Trust.
6. Gupta, P.L. 1981. Coins: Source of Indian History. Ahmedabad: B.J. Institute of Learning and Research.
7. Hultzsch, D. 1969. (Reprint) Corpus Inscriptionum Indicarum Vol. I, Varanasi: Indological Book House.
8. Mangalam, S.J. 1990. Kharoshthi Script. Delhi: Eastern Book Linkers.
9. Pandey, R. 1957. Indian Palaeography. Delhi: Motilal Banarsidas.
10. Rajor, Dilip 2001. Punch-marked Coins of Early Historical India. California. Resha Books International.
11. Sircar, D.C. 1965. Indian Epigraphy. Delhi: Motilal Banarsidas.
12. Sircar, D.C. 1986. (3rd edition) Select Inscriptions. Vol. I, Delhi: Asian Humanities Press.

Certificate Course

Shinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

Dept. of Ancient Indian History, Culture and Archaeology

A lecture series

on

"Mother Earth and Her Secrets of Sustainability"

Honours 2 Credit Activity 2017-2018

Course Content

The Lecture series will focus on

- ✦ Theories of origin of life on earth
- ✦ Ancient civilizations like Indus valley civilization, Mesopotamia, Egypt, Greeks-with reference to Mother-goddess
- ✦ Byzantine Empire and the idea of God
- ✦ Renaissance and the age of Humanism
- ✦ Contemporary knowledge system
- ✦ Sustainability



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF PSYCHOLOGY

Research Paper Writing and Presentation at Khandala Seminar on
PSYCHOLOGICAL REVIEW OF FAMOUS PERSONS, CHARACTERS, EVENTS
AND TRENDS

Honours 2 Credit Activity 2017-2018

Course Write-up

- This is a voluntary activity that psychology students of fy, sy and ty can enrol for. Work begins in August and culminates in January.
- A broad theme is agreed upon after brainstorming with students. Each student chooses a specific topic (within that theme) to write their seminar paper on.
- They receive a two hour initial training on how to decide on specific topic for their seminar paper. They are taught basic research and reference skills. Then students need to work on their own time (involving more than 15 hours of work, usually during the diwali vacation) to create a literature review and outline for their paper.
- They will consult with the teaching staff (they have chosen as their guides) to organize and refine their written paper to be submitted. Final year students who have had experience with this activity are also available to mentor the students doing this for the first time.
- Enrolled students also receive one hour training on effective presentation skills before the seminar.
- The presentation happens in front of a group of peers and staff at the annual Khandala seminar that spans one and a half days (and includes around 15 contact hours of work at Khandala). This entails presentation of one's own paper and attending and giving feedback on others' papers.

Page 1 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65




ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

- There are numerous **advantages** to such an activity as a learning experience for both the student presenters (who learn about research skills and presentation skills) and the student audience (who learn by observing both good and average presentations).
- There is a specific kind of set induction for this seminar which results in a sense of meaningfulness, interest and enthusiasm on the part of students.
- A mastery orientation rather than a performance orientation is encouraged. Everyone learns to give honest, constructive feedback according to specific criteria provided related to the content and style of presentation.
- The final grade on the certificate given by the department takes into account the effectiveness of the presentation, the quality of the written paper and collated audience feedback.
- Using feedback obtained from students over the years, this paper takes a critical look at the **strengths and challenges** of such an activity, from a pedagogical point of view.
- The **presentation sessions** last 45 minutes each with 30 minutes for the speaker and 15 minutes for audience interaction, discussion and feedback.
- Since PPTs are not used, students are encouraged to know their content thoroughly and to find other creative ways of enhancing their presentation and holding the attention of their peers.

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF INTER-RELIGIOUS STUDIES

Joy Of Self Discovery & Cosmic Hug
Honours 2 Credit Activity 2017-2018

Course Content

Joy Of Self Discovery

Sessions on

Dates: 1st to 7th Aug 2017 from 2.45 to 5.00 pm in SCAVI

- Creative Meditation
- Journaling
- Approaches of Spiritual/ Scientific/ Tribal traditions
- Visit to Asha Daan
- Presentation of Creative Assignment

Cosmic Hug 26th-28th Dahanu

At a time when the accelerating pace of Climate Change is threatening to wipe out even the human race it is imperative that we work out alternatives to the present consumerist lifestyle and capitalist development schemes.

Sessions

- EXPOSURE VISIT: LISTEN to the Cry of the Earth
- Workshop
- Presentation of Creative Assignment



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



Sports Business Management Certificate Course

Pyramid Sports is a Sports Management Company, established with the purpose of shaping the sports industry and being a part of sport defining the business landscape in India. Our resolve to leave a mark has prompted us to explore all the facets of sport in the country, ranging from Infrastructure to the running of specific sport events. With dedicated sport professional, our understanding of the industry enables us to provide sustainable and innovative solutions to all our clients.

Our Vision is to be the number one grassroots sport provider in India, nurturing, developing, and propelling young Indian sporting talent to global success both on and off the field.

The Course:

We bring Mr. Alex Twitchen's course to India; Mr. Twitchen being a Senior Lecturer at the University of Chichester and an FA licensed coach. After months of discussion and focus groups, we have specially customised Mr. Twitchen's modules to draw on examples from the Indian Sports Scenario. Topics like the Commonwealth Games, the Indian Grand Prix case study, as well as the prospective merging of the I-League and the ISL will be discussed in the context of the modules. Our esteemed panel of guest lecturers, including founders of reputable sporting companies in India, will add to the points in the module, providing real-life examples of how they have created successful businesses in the industry. The course also allows students a chance to interact with prominent companies and be presented with opportunities for volunteering and work experiences.

Salient Features:

- ▶ 30 Taught/Assessment Hours
- ▶ 4 Modules
- ▶ Weekend Classes
- ▶ Held at St. Xavier's College, in partnership with the Mass Media Department
- ▶ Internship and Volunteering Opportunities at Partner Companies

Course Aims:

- ▶ Help students acquire a fundamental knowledge and understanding of the sports business
- ▶ Examine how the sports business is a peculiar type of business
- ▶ How to manage sports events and volunteers
- ▶ The importance of branding, marketing and communications within sports businesses
- ▶ Identifying good leadership, management, and corporate governance in sport

Page 2 | 6



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
☎ 2262 0661/65

Modules

Module 1: Uniqueness of Sports Business

This Module attempts to identify the niche points of Sport within Management topics, as well as highlighting the structure of Sport.

Module 2: Event Management and Managing Volunteers

This Module attempts to draw on major sporting events such as Sporting World Cups and National Franchisee Leagues to explain the state of Events in the country as well as the importance of volunteers in such a case.

Module 3: Marketing, Promotion, Communication and Brand Management in Sport

This Module attempts to showcase the methods, processes and impact of Marketing and other Communication on the Sporting Landscape.

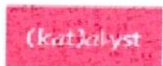
Module 4: Leadership and Management in Sport

This Module attempts to leverage key Leadership and Management curriculum to summarise the role of a leader in sport and what constitutes a Good Leader.

The Course will begin in the last week of March, 2017, which will last for 6-10 days. Interested applicants can register with the St. Xavier's College BMM Department, or send an E-mail to info@pyramidssportsindia.com. The Course Fee is Rs.15,000/- (inclusive of taxes).

This course is aimed at giving students a comprehensive background to the Sports Industry and the opportunities attached to it. In a short span of time, the intensive course will give students a keen insight into the various niches of the Sport Industry in India. The exposure can provide a basis on which deciding to study a full-time course can be made. The Course will also be useful support to an application to a sports management course abroad.

While there is no guarantee for Job Placements, opportunities for internships and volunteering can be facilitated through recommendations from Pyramid Sports. Interviews can be sought at all our professional partners, namely, HotFut Infrastructure, Licious Designs, The Football Mind, Purple Ventures, Katalyst Reputation Management, South United FC, HotFut South United Sports Arenas and the South United Sports Foundation, with more companies being confirmed.



Page 3 | 6



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

PG DEPARTMENT OF BIOTECHNOLOGY

Primary Tissue Culture Using Chick Embryo
Honours 2 Credit Activity 2017-2018

Animal cell culture technique is an integral part of modern biotechnology laboratories. The technique is relevant in experiment designs of molecular biology, developmental biology, virology, immunology, bioprocess technology, drug screening and efficacy testing, among others.

The objective of this short training course for undergraduates is to provide them with hands on technical experience and critical reasoning skills to independently perform cell culture experiments.

Hands-on training in cell culture techniques using chick embryo tissues in an animal cell culture laboratory set up.

Course Content

- ✦ Practical aspects of cell culture
- ✦ Understand the layout of the laboratory, handling of instruments and equipments
- ✦ Aseptic technique for contamination free cultures
- ✦ Maintenance of cell culture environment
- ✦ Primary culture using embryonic tissue
- ✦ Methods for measuring viability
- ✦ Characterisation of cultured cells
- ✦ Maintenance of cells in culture



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinda
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

PG DEPARTMENT OF BIOTECHNOLOGY

"Finding Hidden Messages In Biomolecules": Bioinformatics Approach
Honours 2 Credit activity 2017-2018

Course Content

❖ **Introduction**

Hands on practical sessions combined with theory sessions, aims to determine the role of computers in decoding the messages in DNA and proteins. After completion of this course students will be able to understand basic utilization of computational tools for answering some biological and chemical based problems.

❖ **The course will include**

- ✚ Introduction to the biomolecules
- ✚ A detailed exploration of various biological databases
- ✚ Analysis of biomolecular data using various tools like BLAST, Clustal Omega, Rasmol, Swiss Model, and others.
- ✚ A detailed practical session on in silico experimentation of biological and chemical science.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Morphology And Identification Of Vegetables

Honours 2 Credit Activity 2017-2018

Course Content

The aim of this activity is to develop plant identification skill in students. It will motivate participants in taxonomical identification of the plants used on a daily basis eg. vegetables.

Course includes

- Basis of plant taxonomy
- Morphology of vegetables
- Identification of some local vegetables
- Field trips to whole sale vegetable market, collection and identification of vegetables

Evaluation: Written report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Digitisation Of Botanical Specimens
Honours 2 Credit Activity 2017-2018

Course Content

This activity will help students to develop digitization skills. It will motivate participants with advanced techniques for digitisation of permanent slides of botanical specimens.

Topics to be covered

- Basis of microscopic photography
- Introduction to permanent slides
- Settings and method in microscopic photography
- Documentation trials with submission (Min. 20 slides)

Evaluation

On the basis of their skill for microscopic photography and written report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Open Ended Project

Determining optimal pH for the synthesis of silver nanoparticles using black tea extract
Honours 2 Credit Activity 2017-2018

Course Content

This activity will involve experimentation to determine optimal pH range for the process of silver nanoparticle synthesis using tea.

- Introduction to nanotechnology
- Silver nanoparticle synthesis and its applications
- Black tea extract preparation
- Significance of optimum pH in nanoparticle synthesis
- Determination of optimum pH in nanoparticle synthesis

Assessment: Written Project



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

CHEMISTRY IN ART

Honours 2 credit activity 2017-2018

SYLLABUS

[LECTURES & PRACTICALS]

LEARNING OBJECTIVES

The goal of '*Chemistry in Art*' is to establish a relationship of chemical principles with significance to Art. This introductory chemistry course for science as well as non-science majors explores the intersection of chemistry with Art.

The course includes applications of chemistry to the visual arts.

- This course is intended for science as well as non-science students to
- 1. Develop an appreciation for the importance of the role of chemistry in Art.
- 2. Improve their ability to think critically and logically.
- 3. Become knowledgeable about the connection between chemistry visual arts.

Impact Of Chemistry In Art

□ Module 1

1.1: The Chemistry & Art Connection

- 1.1.1: The earliest use of colour
- 1.1.2: Use of colour to decorate the body and surroundings.
- 1.1.3: Relationship between light and colour
- 1.1.4: Electromagnetic Spectrum, Cause of colour in objects, Properties of Light, The Nature and Behavior of Light, Mixing Colors: Light vs. Pigments
- 1.1.5: Colorants: Pigments and Dyes.
- 1.1.6: Chemistry of art conservation and restoration, Fakes and Forgeries in art.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

Module 2 Practical

2.1: Preparation of Pigments

Sr. no	Name of experiment
1.	Preparation of Prussian Blue
2	Preparation of Malachite green
3	Preparation of Chrome Yellow
4	Preparation of Verdigris
5	Preparation of Green Verditer
6	Preparation of Cobalt Blue
7	Preparation of Cobalt Violet
8	Preparation of Lemon Yellow
9	Preparation of Yellow Ochre
10	Preparation of Red Ochre
11	Preparation of Barium White
12	Preparation of Pigment from Cabbage

Module:3 Painting using ancient painting techniques

1. Painting a Fresco
2. egg tempera
3. Oil paints

Mode of Evaluation: One written assignment, laboratory work (synthesis of pigments) and a painting using materials synthesized by the students.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Blind
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Research Methodology And Analytical Techniques (Basic)

Honors' 2 Credit Course for 2017-18

offered by

Caius Research Laboratory

Course Content

Description: The course involves introducing students to Design of Experiment and application of analytical techniques to research.


The course will involve the following:

1. Introduction to good laboratory practice and safety in lab
2. Introduction to concepts of research
3. Calibration of micropipette
4. Testing accuracy of pipetting and use of UV Spectrophotometer
5. Concept of Mole and preparation of solutions
6. Microscopy: Understanding Light binocular microscope-Bright Field polarising phase contrast microscope
7. Histochemical Localisation and Analysis of different Biomolecules in a Cell using different samples like seeds
8. Understanding enzyme assay – assay of Urease from Different sources like Jack bean
9. Partial purification by ammonium, PEG and ethanol precipitation
10. Effect of Different Metal ions on the Activity of Urease Enzyme

Evaluation: Continuous evaluation and report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honors'2 Credit Course for 2017-18

offered by

Caius Research Laboratory

Research Methodology And Analytical Techniques (Advanced)

Gene Cloning and Protein Crystallisation

Course Content

Description: The course involves introducing students to concepts and techniques of Gene Cloning and genomic DNA library preparation and techniques of protein crystallisation

The course will involve the following:

1. Isolation of Genomic DNA from *E.coli*
2. Isolation of plasmid DNA – pUC19
3. Agarose gel electrophoresis of DNA
4. Restriction Enzyme digestion of DNA (Genomic and Plasmid DNA)
5. Preparation of recombinant Plasmid by ligation
6. Preparation of competent cells and transformation
7. Screening for protease, lipase and amylase producers
8. Crystallisation of protein- Ribonuclease from goat pancreas
9. Microscopy techniques: Observation of protein crystals under microscope

Evaluation: Continuous evaluation and report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Quest for Excellence Programme (QEP)/Honours 2 credits activity

Academic Year 2017-2018

Vertebrate Embryonic Development: Creating a Developmental Atlas using
Whole Mounts of Chick and Zebrafish Embryos

Course Content

Description:

Both the above-mentioned organisms are being extensively used in the field of developmental biology to unravel the mysteries of development. Students will get an opportunity to familiarize themselves with vertebrate model organisms and understand gross morphological milestones in development during embryogenesis.

The course will involve the following:

- Handling model systems such as chick embryo and zebra fish embryo
- Exploring gross morphological milestones in development.
- Specimen preparation and microscopy
- Documenting observations
- Report writing

Evaluation: Continuous laboratory work evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Quest for Excellence Programme (QEP)/Honours 2 credits activity

Academic Year 2017-2018

Does Estradiol Regulate Retinal Development and Neurogenesis?

Course Content

Description:

Estradiol which is primarily a gonadal steroid is also known to be synthesized in the brain. Recent reports indicate a role for estradiol in neural development and generations of neurons. The chick embryo retina offers an easily accessible model system to study the role of this steroid on neurogenesis.

The course will involve the following:

- Exposure to Research Methodology
- Working with fertilized eggs and chick embryos
- Design experiments to study Estradiol-mediated neurogenesis in the developing chick embryo system
- Morphological observations of control (untreated) and treated chick embryos and assessing effects on day 3, 4 and 5 of development by histological and biochemical techniques.
- Report writing

Continuous laboratory work evaluation and Report writing.

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Quest for Excellence Programme (QEP)/Honours 2 credits activity

Academic Year 2017-2018

Mapping the Microscopic Biodiversity of Sanjay Gandhi National Park,
Mumbai

Course Content

Description:

The project aims at studying the microscopic biodiversity in niche environments of the Sanjay Gandhi National Park (SGNP), Borivali, Mumbai, based on on-site observations and in-lab experimentation.

The course will involve the following:

- Exposure to Research Methodology
- Field visits for collection of samples from SGNP
- Microscopic biodiversity and mapping of the diversity
- Documentation of sample collection and field visits
- Report writing

Evaluation: Continuous laboratory work evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

**5, Mahapalika Marg, Mumbai - 400 001,
INDIA.**

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Quest for Excellence Programme (QEP)/Honours 2 credits activity

Academic Year 2017-2018

Experimental Activity: ROS Studies in Yeast

Course Content

Description:

The study involved monitoring alcohol induced reactive oxygen stress in 2 Yeast strains viz *Saccharomyces cerevisiae* and another one isolated from a fruit (J3).

The course will involve the following:

- Exposure to research methodology
- Microbiological techniques
- Culturing Yeast and maintaining yeast cultures
- Planning and conducting experiments to monitor alcohol induced cell death in yeast cultures by viability studies.
- Monitor using fluorescent microscopy reactive oxygen stress in alcohol exposed yeast cells labelled with ROS sensitive fluorescent dye 2,4 dichlorodihydrofluorescein diacetate.
- Effect of antioxidants such as vitamin E or Ascorbic acid.
- Result compilation and analysis
- Report writing

Evaluation: Continuous evaluation and Report writing.

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF MICROBIOLOGY

Animal tissue culture
Honours 2 Credit Activity 2017-2018

Course Content

❖ Introduction

Animal tissue culture is a major tool in basic research as well as in modern medicine. Some of the important areas in which cell culture plays a key role are cancer research, toxicity testing, virology, immunology, cytogenetics, stem cell biology, drug screening and gene therapy. The workshop is designed to provide a thorough understanding of this technique through theory sessions and laboratory exercises.

❖ Topics to be covered

The course will focus on practical aspects, such as design and layout of the cell culture laboratory, aseptic techniques, media preparation, methods for measuring viability, sub-culturing, cryopreservation, revival and cytotoxicity.

The course will focus on practical aspects of Animal Tissue Culture.

- ✦ Design and layout of the cell culture laboratory
- ✦ Aseptic techniques and media preparation
- ✦ Revival of cryopreserved cells
- ✦ Methods for measuring viability
- ✦ Sub-culturing and cryopreservation,
- ✦ Cytotoxicity assays.
- ✦ Primary culture of chick embryo fibroblasts

❖ **Mode of Assessment:** Written exam on practical aspects of the course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



St. Xavier's College (Autonomous) -
Mumbai

Syllabus For
**DIPLOMA IN FORENSIC SCIENCE
& CRIMINAL LAW**



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science, St. Xavier's College (Autonomous) - Mumbai

DIPLOMA IN FORENSIC SCIENCE AND CRIMINAL LAW

Learning Objectives of the Diploma in Forensic Science and Criminal Law:

- To provide an introduction and orientation to the functioning of the Indian Criminal Justice delivery system, and the role forensic science plays in this process.
- To hone the basic skills necessary for forensic science investigations.
- To develop a critical understanding of the diverse institutions of 'crime' control.
- To demonstrate competency in the collection, processing, analyses, and evaluation of evidence.

Learning Outcomes of the Diploma in Forensic Science and Criminal Law:

- Should be able to demonstrate competency in the principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence.
- Should be able to demonstrate an understanding of the scientific method and the use of problem-solving within the field of forensic science.
- Should be able to identify the role of the forensic scientist and physical evidence within the criminal justice system.
- Should be able to demonstrate the ability to document and orally describe crime scenes, physical evidence, and scientific processes.
- Should be able to identify and examine current and emerging concepts and practices within the forensic science field.

Course Units and Credits

SEMESTER	UNIT NO	UNIT NAME	CREDIT POINTS
1	SXC-DFSCCL-01	The Basics of Crime Scene Investigation	4
1	SXC-DFSCCL-02	Ethics and Research Methods in Forensic Science	4
1 & 2	SXC-DFSCCL-03	The Functioning of the Indian Judicial System: Crime Scene to Court Room	4
2	SXC-DFSCCL-04	Impression Evidence	4
1	SXC-DFSCCL-05	Introduction to Forensic Serology	4
2	SXC-DFSCCL-06	Forensic DNA Analysis	4
2	SXC-DFSCCL-07	Microbial Forensics and Forensic Immunology	4
1	SXC-DFSCCL-08	Forensic Toxicology and Medicine	4
1 & 2	SXC-DFSCCL-09	Emerging Trends in Forensic Science	4
1 & 2	SXC-DFSCCL-10	Research Case Study and Moot Court	6





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

UNIT 1

➤ THE BASICS OF CRIME SCENE INVESTIGATION (10 lectures)

An introduction of the application of science to solving crime

- Definition, Specializations in Forensics, Basic structure of Forensic Labs in India
- Mechanics of Justice and the Justice Triangle
- Locard's Exchange Principle
- Concepts of Identification, Individualization, Classification, Exclusion, Evidential Value
- Types of Physical evidence
- Processing & Investigation
- Defining the crime scene; Basic processing methodology
- Evidence recognition
- Documentation techniques
- Packaging, storage and transportation of evidence
- Control Samples, Scientific and Legal integrity of evidence

➤ Assessment Modalities

- Mock Crime Scene Practical (30%)
- Assignment (20%)
- Mock Test (10%)
- End of Unit Examination (40%)

UNIT 2

➤ ETHICS AND RESEARCH METHODS IN FORENSIC SCIENCE (12 lectures)

There are three interrelated modules

- Ethics in Forensic Science – the necessity for a professional ethical code in the practice of forensic science and describes the ethical conflicts that can arise when working in this profession.
 - Introduction to Quality, Competency & Ethics
 - Quality Control and Quality Assurance
 - Laboratory Standards; Accreditation and Certification
 - Quality of an Individual
 - Ethics in Forensic Science
- Research Methods in Forensic Science – the relevance and application of the scientific method in modern forensic science, including formulating research questions, applying the appropriate research methodology and making recommendations based on the analysed result.
 - Various components of the Scientific Method
 - Effective scientific communication through scientific writing and oral presentations
 - Critical Analysis of a Forensic Case Study

©Department of Zoology, St. Xavier's College

Page 3 of 8



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

[Signature]
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

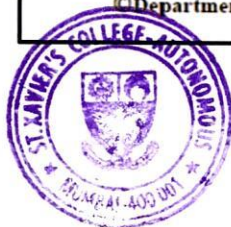
- Application of Statistics in Forensic Science –the use and interpretation of statistics as a tool in analysing forensic data.
- **Assessment Modalities**
 - Class Debate – Group based Activity (20%)
 - Forensically Applicable Statistics Assignment (10%)
 - Literature Review (15%)
 - End of Unit Examination (50%)
 - Attendance (5%)

UNIT 3

- **THE FUNCTIONING OF THE INDIAN JUDICIAL SYSTEM: CRIME SCENE TO COURT ROOM** (15 lectures)
An examination of the nature and purposes of criminal law along with the basic elements of criminal offences.
 - Understand how a FIR and Panchnama are filed
 - The hierarchy of the Court system in India
 - Basic elements of an offence and their analysis
 - Process of a Criminal Trial– from arrest of the suspect to sentencing
 - The role of the forensic scientist as an expert witness
 - Admissibility of forensic evidence
- **Assessment Modalities**
 - Assignment on the application of relevant laws to a mock case scenario (20%)
 - Mock Tests (20%)
 - End of Unit Examination (50%)
 - Attendance (10%)

UNIT 4

- **IMPRESSION EVIDENCE** (12 lectures)
An outline of how markings are produced when one object comes into contact with another, leaving behind some kind of indentation or print known as impression evidence. Such evidence encountered includes footwear impressions, tyre marks, and markings created by tools and similar instruments.
 - Introduction to Fingerprints and Biometrics
 - Basic principles of fingerprint analysis, comparison and identification
 - Introduction to biometric systems of identification
 - Introduction to Firearms and Ballistics
 - Parts and Types of firearms, mechanism of firing a weapon
 - Forensic evidence left at the crime scene
 - Reconstruction of crime scenes involving firearms
 - Introduction to Other Impression Evidences
 - Questioned Document Examination & Signature Verification





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Explain the forensic significance of class and individual characteristics to the comparison of tool mark, footwear, and tire impressions

➤ **Assessment Modalities**

- Fingerprint Practical (15%)
- Questioned Document Practical (15%)
- End of Unit Examination (60%)
- Attendance (10%)

UNIT 5

➤ **INTRODUCTION TO FORENSIC SEROLOGY** (10 lectures)

The application of the study of blood, semen, saliva and other body fluids, to legal matters.

- Body fluids found at crime scenes
 - Introduction to body fluids; related crime scenes
 - General crime scene processing methodologies
- Blood
 - Composition: Basic blood genetics
 - Forensic analysis of blood evidence
 - Blood spatter analysis – blood flight characteristics, types of BSP, crime scene reconstructions
- Semen and Sexual Assault Cases
 - Composition of semen; sexual assault and rape crime scenes
 - Examination of the victim
 - Forensic analysis of semen stains
- Other Body Fluids
 - Forensic analysis of Saliva
 - Forensic analysis of Urine

➤ **Assessment Modalities**

- Blood Spatter Practical (15%)
- Body Fluids Practical (15%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 6

➤ **FORENSIC DNA ANALYSIS** (15 lectures)

The basics of cell biology and DNA analysis, and its application to investigations and the judicial system. Special reference is made to the application of forensic DNA technology to prosecutions, defences and exonerations.

- DNA – definition, importance, sources, types of crime scenes; historical perspective
- Short Tandem Repeats: Low copy number DNA; Y chromosomal analysis; Mitochondrial DNA
- CODIS – Combined DNA Index System





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- DNA evidence processing – Collection, Extraction, RFLP v/s PCR, Separation techniques, Output data interpretation
 - Problems in DNA Analysis; Mixtures of DNA
 - Paternity Testing- Genetic Systems used for Paternity Tests
 - Statistics & Population Genetics – Hardy Weinberg Equilibrium
- **Assessment Modalities**
- Power point Presentation (25%)
 - Mock Tests (15%)
 - End of Unit Examination (60%)

UNIT 7

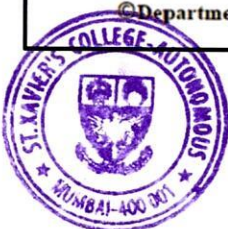
- **MICROBIAL FORENSICS AND FORENSIC IMMUNOLOGY** (15 lectures)
- Microbial Forensics combines principles of public health epidemiology and law enforcement to identify patterns in a disease outbreak, determine which pathogen may be involved, and trace the organism to its source.
- Differences between Bio crimes and Bioterrorism
 - Biosecurity & Microbial Forensics – types of biological agents, collection, preservation and analysis of these biological agents during investigation
 - Management of biological threats – evaluate biosecurity threats and implementation of resolution through microbial forensics analytical techniques
- **Assessment Modalities**
- PowerPoint Presentation (25%)
 - Assignment (10%)
 - Mock tests (10%)
 - End of Unit Examination (50%)
 - Attendance (5%)

UNIT 8

- **FORENSIC TOXICOLOGY AND MEDICINE** (15 lectures)
- There are three interrelated modules
- Forensic Toxicology – an introduction to toxicological samples, including their presumptive and confirmation testing in a variety of biological materials. A comprehensive, pharmacological and analytical review of some major alcohol and drug classes is taught.
 - Forensic Medicine – an overview of the protocols of the mortuary and crime scene, the medico-legal autopsy and post-mortem changes relevant to the solving of a crime.
 - Forensic Anthropology & Odontology – how information gathered from skeletal and dental materials can be used to determine the age, sex and stature of an individual, while providing evidence of pathology and/or trauma.
- **Assessment Modalities**
- Class Discussion related to Forensic Medicine (10%)

©Department of Zoology, St. Xavier's College

Page 6 of 8



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Toxicology Practical (20%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 9

➤ EMERGING TRENDS IN FORENSIC SCIENCE (15 lectures)

Advances in technology as well as society's growing dependence on technology have changed the way in which crime is investigated and the types of crimes committed, with a notable increase in cybercrime offences.

- Cyber Crime Investigation
 - Understanding cyber forensics
 - Cyber Law
 - Electronic crime scene investigation (electronic evidence; internet; networks)
 - Digital Privacy
 - Types of cyber crime
- Integrating forensic techniques into incident response
- Recent advances - forensic accounting, forensic engineering, forensic psychology

➤ Assessment Modalities

- Cyber Forensics Practical (20%)
- Forensic Psychology Practical (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 10

➤ RESEARCH CASE STUDY AND MOOT COURT (15 lectures)

Independent research into a topic in the field of forensic science supported by lectures taught during the course. Students are trained to give scientific expert witness testimony in their chosen topics.

➤ Assessment Modalities

- Literature Review (20%)
- Case Study Research Report (40%)
- Moot Court (40%)

Practical Course:

1. Investigation and Processing of a Mock Crime Scene
2. Questioned Document Examination
3. Fingerprint Processing, Analysis and Identification
4. Blood Spatter Analysis on various surfaces
5. Body Fluids Analysis – saliva and blood
6. Toxicological Analysis of Drugs using Thin Layer Chromatography





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

Recommended References:

- Casey, E. (2011). *Digital evidence and computer crime: Forensic science, computers, and the internet*. Academic press.
- Houck, M. M., & Siegel, J. A. (2009). *Fundamentals of forensic science*. Academic Press.
- Fisher, Barry, A. J., Tilstone, W. J. & Woytowicz, C. (2009). *Introduction to Criminalistics: The Foundation of Forensic Science*. Elsevier Academic Press.
- Robertson, B., Vignaux, G. A., & Berger, C. E. (2016). *Interpreting evidence: evaluating forensic science in the courtroom*. John Wiley & Sons.
- Saferstein, R. (2013). *Criminalistics*. Pearson Education.

#####





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

BEES (Behavioural, Ecological and Evolutionary Sciences)

Honours 2 Credit Activity 2017-2018

Course Content

This is an interactive course, where a small part will be covered by conducting lectures to introduce the students to the basics of measuring animal behaviour and relating behaviour to ecology and evolution. For the remaining major part, the students will be divided in groups and will be asked to undertake projects in the field of behaviour and ecology.

❖ Topics include

- History of Ethology
- Classical experiments in animal behaviour
- Common problems in recording animal behaviour
- Various techniques to record animal behaviour
- Analysis of recorded data
- Practical: Data collection from pre-recorded behavioural sequences, Data collection on live animals, Analysis

❖ Assessment

Attendance, Performance in doing the projects, Presentation, and Project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

Ornithology And Herpetology

Honours 2 Credit Activity 2017-2018

Course Content

Students will learn about the Taxonomy, Classification and Biology of Reptiles (Snakes) and Birds through lectures and field trips. A lecture course cum field visit will be conducted

❖ Topics to be covered in the course


- Introduction to Ornithology (Study of birds)
- Classification and characteristics of birds
- Taxonomy and identification of birds
- A brief introduction to the use and types of binoculars
- A brief introduction to migration of birds
- Introduction to Herpetology (Study of reptiles)
- Classification and characteristics of reptiles (specifically snakes)
- Difference between poisonous and non-poisonous snakes
- Myths about snakes
- Taxonomy and identification of snakes
- Field trip to study the practical aspects of the theory and to observe birds, snakes and other reptiles in nature.
- Submission of the report on the trip

❖ Assessment

On the basis of a field report and overall performance and participation during the course.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

**5, Mahapalika Marg, Mumbai - 400 001,
INDIA.**

☎ 2262 0661/65

2016 - 2017



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

STUDY OF EPIGRAPHY AND NUMISMATICS OF INDIA

○ **Objective:**

- This is a course deals with development of the study of scripts and coinage in ancient India which enable a student to utilise the sources to reconstruct the past. The course will be dealt with the help of Literary, Archaeological, Numismatic and Epigraphic evidences for a holistic view of the facets of Indian culture.

○ **Content:**

- Introduction to Epigraphy
 - Aims, scope and definition of epigraphy
 - Origin and development of different scripts with special reference to Indus script, Brahmi, Kharoshthi
 - Indian eras (Shaka, Vikrama, Gupta, Chedi-Kalchuri)
- Ancient Indian Scripts
 - Brahmi
 - Kharoshthi
 - Persian
 - Introduction to post-ancient scripts for referencing and development of these ancient Indian scripts
- Introduction to Numismatics
 - Aims, scope and definition of numismatics
 - Medium of exchange
 - Techniques of manufacturing
- Coinage
 - Janapada (PMC & EUCC), Indo-Greek-Parthian- Scythian
 - Western Ksatrapas, Kushan, Satavahana, Tribal coins
 - Gupta, Pallavas, Chola and Cheras
 - Delhi Sultanate and Greater Mughal Coins

Bibliography:

1. Allan, J. 1935. Catalogue of Coins of Ancient India. London: British Museum.
2. Allchin, F.R. and K.R. Norman. 1985. "Guide to the Ashokan Inscriptions". South Asian Studies.

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinda
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

3. Altekar, A.S. 1957. Coinage of the Gupta Empire. Varanasi: Numismatic Society of India.
 4. Epigraphia Indica Vols. I-X.
 5. Gupta, P.L. 1979. (2nd Revised Edition) Coins. New Delhi: National Book Trust.
 6. Gupta, P.L. 1981. Coins: Source of Indian History. Ahmedabad: B.J.Institute of Learning and Research.
 7. Hultzsch.D. 1969. (Reprint) Corpus Inscriptionum Indicarum Vol.I, Varanasi: Indological Book House.
 8. Mangalam, S.J. 1990. Kharoshthi Script. Delhi: Eastern Book Linkers.
 9. Pandey, R. 1957. Indian Palaeography. Delhi: Motilal Banarsidas.
 10. Rajor, Dilip 2001. Punch-marked Coins of Early Historical India. California. Resha Books International.
 11. Sircar, D.C. 1965. Indian Epigraphy. Delhi: Motilal Banarsidas.
 12. Sircar, D.C. 1986. (3rd edition) Select Inscriptions. Vol.I, Delhi: Asian Humanities Press.
- *****
-

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

HISTORY OF PERFORMING ARTS AND THEATRE IN INDIA

o **Objective:**

- In an endeavour to further the holistic understanding of Ancient Indian Culture in all the parameters the attempt of this Paper aims to provide a sound grounding in understanding the nuances of performing arts. Focus, will be on the theoretical understanding and the relevance of the same in the realm of studying the essence of Ancient Indian culture. Whether they are sculptures, Art, Architecture, or Paintings, performing arts (Music and Dance traditions) is an innate part of the same. The attempt of this course is to enlighten the student to this synergy between fluid and static arts, this way broadens their horizon and innate understanding of the subject Ancient Indian Culture.

o **Content:**

- **Sources for tracing the development of Performing arts in Ancient India**
 - o Literary Sources: - Specific Study of Natyashastra , Abhinaya Darpana, Vishnu Dharmottra Purana with reference to the Origin and the development of the arts.
 - o Document and study the references of Performing arts in the Literary Works of Sacred and Secular.
 - o Contribution of Epics, in documenting the development of Performing arts.
 - o Study the development of Archaeological sources in documenting the development of performing arts. Specific references, to Brihadeeshwara temple, Chidambaram, Sun Temple in Konark, Ramappa Temple in Warangal. Study the development of the same in the context to Paintings, both Frescoes and Murals.
- **Music**
 - o Understanding the elements of Music- Nad, Shruti, Swara, Saptak.
 - o Studying the Structure of a Raga- Genesis- Tat, Jati, Vadi, Samvadi, Varjit Swara, Samay Chakra, The importance of Tala (Both Carnatic and Hindustani). A brief idea of the concept and constituents of Khyal and Gath in Instrumental music.

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.


Department of Ancient Indian History, Culture and Archaeology

- A study of the basic features and Structure of Gharanas (Hindustani Music) in Khyal Gayaki. Contribution and life history of famous musicians of the Gharanas.
- A study of the basic features of Carnatic Music. The forms of Kirtana, Kreethi, Javali. A study of the life history and contribution of the Trinity to Carnatic music.
- Forms and styles of Vocal performances:-
 - Dhrupad, Dhamar, Khyal, Tarana, Tappa, Thumri, Dadra, Hori
- Classification and study the contribution of Instrumental music In India.
- Material and Technology of musical instruments
- **Dance**
 - The Study of the elements and structure of Dance.:-
 - The concept of Nrta, Nritya and Natya.
 - Study of Abhinaya- Angika, Vachika, Aharaya and Sattvika.
 - The study of Vruttis
 - Construction of a stage.
 - The study of Rasa and Bhava. :-
 - The Nayak and Nayika bhed
 - The understanding of Natyadharmi and Lokadharmi
 - Thandav and Lasya styles of performances
 - Study of the famous classical dances of India and study the life history of famous dancers and their dance schools with their contribution.
 - Study the famous folk dances from the States of India and their contribution.
 - Garba, Lavani, Kollatam. Lezium, Lambada, Dhimsa, Siddhi, Bihui, Pulikali, Koli dance, Kavadi, Ghumar, Burrakatha, Jatra
 - Material and Technology of costumes and props Material and Technology of the tangible aspects of folk art
- **Traditional Indian Theatre**
 - The development of Tradition Indian Theatre

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

- Kutiyattam, Yakshanagana, Bhagvatamela natakam, Bhavai, Yatra, Tamasa, Chau
- Traditional Indian Puppetry.
- A critical study of the situation of performing arts today. Their contribution.
 - Media
 - Music and Dance universities and degrees
 - Popular culture- Role of Cinema, College festivals, Organizations and sabha
- **Bibliography:**
 1. Vatsyayan Kapila (1968) Classical Indian Dance in Literature and the Arts, Sageet Natak akademi
 2. Nair Rajeev (2007) A Rasika's journey Through Hindustani Music, Indialog publications pvt ltd
 3. Rao Appa P.S.R and Sastry Rama P (1997) Bharata's Natya Shastra, A naatya mala publication
 4. Coomaraswamy Ananda, (1987) A mirror of Gesture, Munshiram Manoharlal Publishers pvt ltd
 5. Coomaraswamy Ananda (1987) Dance Of Shiva, Munshiram Ma noharlal Publishers pvt ltd
 6. Rangacharya Adya (1971) The Indian Theatre, National Book Trust of India
 7. Kishore B.R (Dr) (1988) Dances of India, Diamond Pocket Books
 8. Rao Krishna U.S (1980) A Dictionary of Bharata Natya, Orient Longman publication
 9. Sarabhai Mnilani (1981) Understanding Bhararatanatyam , Ther Darpana Academy of Performing arts
 10. Tarlekar G.H, (1975) Studies in the Natya Shastra, Motilal Banarsidass publication.
 11. Gosh Manmohan (1975) Nandikesvara Abhinayadarpanam, Manisha Granthalaya Pvt limited
 12. Bagchee Sandeep (1992) Nad Understanding Raga Music, Business Publication Pvt ltd

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Blunde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

13. Sangeetha Natya Kala Sanhrama (1985) Kal;asadan publication Mumbai.
 14. Subrahmanyam Padma.Dr (1979) Bharatas art then and now, Nrithyodaya, Madras
 15. Subrahmanyam Padma .Dr (2003) Karanas Common Dance codes of India and Indonesia, Nrithyodaya Chennai
 16. Sawra Bharati, (2011) Dance and Dance Traditions , Bharatiya Vidya Bhavan publication
 17. Bhatkande Sangeet Shastra- Hatras publication (5 volumes)
 18. Classical Dances in India- Bharatiya Vidya Bhavan Publication
 19. Swara Bharati (2011) Dance and Dance traditions- Bharitya Vidya Bhavan
 20. Sangeet Visharad- Hatras Publication.
-

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

Maritime Heritage of Ancient India

o Objectives:

- This course is recommended to understand the maritime tradition which existed in India from the proto-historic period. This course will help understand the impact of this traditional heritage on the cultural history of India.

o Content:

• Introduction to Indian Maritime Trade

- o Sources (Literary ,Oral, Archaeological
- o Trade Routes (Land and sea)
- o Satavahanas and Trade Guilds

• Maritime Trade in early India

- o Ports and Ship yards and types of ship on the western and the eastern coast of India. (Marine archaeology)
- o Blue Water trade
- o White Water Trade
- o Introduction to marine archaeological conservation

• River Economy

- o Trading centers and merchant guilds.
- o Trade and river system in Northern and central India.
- o Trade and river system in Deccan and South India.

• Trade In Early Medieval Period

- o Trade with South and South East Asia.
- o East Asian Trade
- o Early European Trade


o Bibliography:

1. Begley, Vimala and Richard Daniel de Puma, 1992, Rome and India: The Ancient Sea Trade. Delhi
2. Begley, Vimala, 1996, The Ancient Port of Arikamedu- New Excavation and researches 1989-1992- Pondicherry.
3. Boussac, Marie- Francoise and Jean Francois Salles, 1995: Essays on the Interrelations between India, Arabia and the Eastern Mediterranean, New Delhi.
4. Chakravarti Ranabir (ed) 2001, Trade in Early India. Oxford.

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

5. Chamoakalakshmi. R, 1996, Trade, Ideology and Urbanisation. Delhi.
6. Chandra Moti, 1977, Trade and Trade Routes in Ancient India, New Delhi.
7. Gogte, V.D.2000. Indo- Arabian Maritime Contacts during the Bronze Age: Scientific Study of pottery from Ras al-Junayz (Oman), Adumatu, Issue no.2 (July), 7-14.
8. Jain V.K 1990, Trade and traders in western India, New Delhi.
9. Lahiri Nayanjot, 1992, The Archaeology of India Trade Routes (up to 200B.C), Delhi.
10. Liu Xinria,1988, Ancient India and Ancient China- Trade and Religious Exchanges, Delhi.
11. Ray Himanshu Prabha, 2003, The Archaeology Of Seafaring in Ancient South Asia, Cambridge.
12. Vohra N.N, (ed) 2002 India and East Asia Culture and Society, Delhi



Certificate Course

[Handwritten Signature]

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

Brief study of the Comparative Mythology of the World.

○ Objectives:

- Study of Mythologies of world civilizations.
- Understanding various classifications of myths.
- Comparative analysis of Indian and other world mythologies.

○ Content:

- Introduction to World Mythology
 - Introduction & Origin of the concept
 - Concept and Approaches for Comparative Mythology
 - Linguistic
 - Psychological
 - Structural
 - Historical and comparative
 - Phylogenetical
 - Creation and Regeneration Myths (20 lecs)
 - Creation of Universe & Mankind
 - Creative Sacrifice
 - Regeneration and Resurrection
 - Flood Myth
 - Cult of Deities, Heroes & Animals:
 - Mythical Heroes across the globe
 - Deities & Progenitors
 - Fertility Cult.
 - Broad category of animal & Hybrid animal myths across the globe
 - Space , After Life , Time and End of Times.
 - Mythological Sites & Spaces
 - Concept of After Life
 - Concept of Time
 - End of Time and Eschatology

○ Bibliography:

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

1. Amiet, Pierre, 1981, Art in the Ancient World: A Handbook of Styles and Forms, New York, Rizzoli.
2. Bottero, Morris, 1992, Mesopotamia: Writing, Reasoning, and the Gods ,Chicago ,Univ. of Chicago Press.
3. Akurgal, Ekrem, 1968, The Art of Greece: Its Origin in the Mediterranean and the Near East, New York, Crown.
4. Cotterell Arthur and Storm Rachel,2014, The Encyclopedia of World Mythology, Hermes House, China.
5. Daniels Mark,2016,World Mythology in bite-Sized Chunks,Michael O' Mara Books Limited,London
6. Davies Nigel and Hammond Norman, 2000,Empires Of Early Latin America: The Maya , The Aztecs , The Incas,Folio Society.
7. Egyptian Book of the Dead: The Book of Going Forth by Day: Being the Papyrus of Ani, Trans. Raymond O. Faylknor,1994,San Francisco Chronicle.
8. Hurwit, Jeffrey .M. 1985, The Art and Culture of Early Greece 1100-480 B.C. Ithaca, N.Y: Cornell Univ. Press.
9. Scully, Vincent, 1979, The Earth, the Temple and the Gods: Greek Sacred Architecture, Yale Univ. Press.
10. Saggs O.R., Gardiner H.W.F, Cook Alan, Gurney J.M.,1999,Empires of the Ancient Near East: The Hittites; The Babylonians; The Egyptians; The Persians, Folio Society
11. Walisiewicz Marek, Dye Kati, Abbott Louise, Dickson Jamie and Tomly Sarah, 2007Eyewitness Companions Mythology,Dorling Kindersley Limited,Delhi,
12. Woolley,Leonard,1961,The Art of the Middle East including Persia ,Mesopotamia and Palestine ,New York ,Crown

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF PSYCHOLOGY

Research Paper Writing and Presentation at Khandala Seminar on
APPLICATION OF PSYCHOLOGY TO CURRENT EVENTS/PHENOMENA
Honours 2 Credit Activity 2016-2017

Course Write -up

- This is a voluntary activity that psychology students of fy, sy and ty can enrol for. Work begins in August and culminates in January.
- A broad theme is agreed upon after brainstorming with students. Each student chooses a specific topic (within that theme) to write their seminar paper on.
- They receive a two hour initial training on how to decide on specific topic for their seminar paper. They are taught basic research and reference skills. Then students need to work on their own time (involving more than 15 hours of work, usually during the diwali vacation) to create a literature review and outline for their paper.
- They will consult with the teaching staff (they have chosen as their guides) to organize and refine their written paper to be submitted. Final year students who have had experience with this activity are also available to mentor the students doing this for the first time.
- Enrolled students also receive one hour training on effective presentation skills before the seminar.
- The presentation happens in front of a group of peers and staff at the annual Khandala seminar that spans one and a half days (and includes around 15 contact hours of work at Khandala). This entails presentation of one's own paper and attending and giving feedback on others' papers.

Page 1 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65




ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

- There are numerous **advantages** to such an activity as a learning experience for both the student presenters (who learn about research skills and presentation skills) and the student audience (who learn by observing both good and average presentations).
- There is a specific kind of set induction for this seminar which results in a sense of meaningfulness, interest and enthusiasm on the part of students.
- A mastery orientation rather than a performance orientation is encouraged. Everyone learns to give honest, constructive feedback according to specific criteria provided related to the content and style of presentation.
- The final grade on the certificate given by the department takes into account the effectiveness of the presentation, the quality of the written paper and collated audience feedback.
- Using feedback obtained from students over the years, this paper takes a critical look at the **strengths and challenges** of such an activity, from a pedagogical point of view.
- The **presentation sessions** last 45 minutes each with 30 minutes for the speaker and 15 minutes for audience interaction, discussion and feedback.
- Since PPTs are not used, students are encouraged to know their content thoroughly and to find other creative ways of enhancing their presentation and holding the attention of their peers.

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF INTER-RELIGIOUS STUDIES

Hinduism And Buddhism

Honours 2 Credit Activity 2016-2017

Course Content

Religion, and especially Spirituality, is not meant merely for academic study, but also for all-round transformation. Hence this course is intended to broaden the horizons of our minds, enkindle and fan the flames of love in our hearts, and enrich and deepen our spiritual life, through the encounter with Hindu and Buddhist spiritualities. It is hoped that such an encounter will transform our heads (academic progress), our hearts (the depths of our being), and our hands (to work in collaboration for social and ecological uplift) and thus inspire us to develop a holistic spirituality that will blend immanence and transcendence, introspection and outreach, contemplation and action, and put us in touch with the Sacred, ourselves, other humans and the cosmos.

❖ Topics include

- Scriptures, main perspectives, doctrines, myths, rituals and schools.
- Relationship between the Sacred, human beings and the cosmos.
- The main contributions of the most popular text, the *Bhagavad-gita*.
- Social concern and eco-spirituality.
- Life experience of the Buddha and the basic doctrines of Buddhism.
- Buddhism, in its efforts to inculturate itself into different cultures of Asia
- Buddhism in India and other countries of Asia.
- Attempts of Buddhism to keep pace with modern developments



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



Sports Business Management Certificate Course

Pyramid Sports is a Sports Management Company, established with the purpose of shaping the sports industry and being a part of sport defining the business landscape in India. Our resolve to leave a mark has prompted us to explore all the facets of sport in the country, ranging from Infrastructure to the running of specific sport events. With dedicated sport professional, our understanding of the industry enables us to provide sustainable and innovative solutions to all our clients.

Our Vision is to be the number one grassroots sport provider in India, nurturing, developing, and propelling young Indian sporting talent to global success both on and off the field.

The Course:

We bring Mr. Alex Twitchen's course to India; Mr. Twitchen being a Senior Lecturer at the University of Chichester and an FA licensed coach. After months of discussion and focus groups, we have specially customised Mr. Twitchen's modules to draw on examples from the Indian Sports Scenario. Topics like the Commonwealth Games, the Indian Grand Prix case study, as well as the prospective merging of the I-League and the ISL will be discussed in the context of the modules. Our esteemed panel of guest lecturers, including founders of reputable sporting companies in India, will add to the points in the module, providing real-life examples of how they have created successful businesses in the industry. The course also allows students a chance to interact with prominent companies and be presented with opportunities for volunteering and work experiences.

Salient Features:

- ▶ 30 Taught/Assessment Hours
- ▶ 4 Modules
- ▶ Weekend Classes
- ▶ Held at St. Xavier's College, in partnership with the Mass Media Department
- ▶ Internship and Volunteering Opportunities at Partner Companies

Course Aims:

- ▶ Help students acquire a fundamental knowledge and understanding of the sports business
- ▶ Examine how the sports business is a peculiar type of business
- ▶ How to manage sports events and volunteers
- ▶ The importance of branding, marketing and communications within sports businesses
- ▶ Identifying good leadership, management, and corporate governance in sport





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Modules

Module 1: Uniqueness of Sports Business

This Module attempts to identify the niche points of Sport within Management topics, as well as highlighting the structure of Sport.

Module 2: Event Management and Managing Volunteers

This Module attempts to draw on major sporting events such as Sporting World Cups and National Franchisee Leagues to explain the state of Events in the country as well as the importance of volunteers in such a case.

Module 3: Marketing, Promotion, Communication and Brand Management in Sport

This Module attempts to showcase the methods, processes and impact of Marketing and other Communication on the Sporting Landscape.

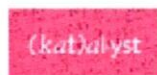
Module 4: Leadership and Management in Sport

This Module attempts to leverage key Leadership and Management curriculum to summarise the role of a leader in sport and what constitutes a Good Leader.

The Course will begin in the last week of March, 2017, which will last for 6-10 days. Interested applicants can register with the St. Xavier's College BMM Department, or send an E-mail to info@pyramidssportsindia.com. The Course Fee is Rs.15,000/- (inclusive of taxes).

This course is aimed at giving students a comprehensive background to the Sports Industry and the opportunities attached to it. In a short span of time, the intensive course will give students a keen insight into the various niches of the Sport Industry in India. The exposure can provide a basis on which deciding to study a full-time course can be made. The Course will also be useful support to an application to a sports management course abroad.

While there is no guarantee for Job Placements, opportunities for internships and volunteering can be facilitated through recommendations from Pyramid Sports. Interviews can be sought at all our professional partners, namely, HotFut Infrastructure, Licious Designs, The Football Mind, Purple Ventures, Katalyst Reputation Management, South United FC, HotFut South United Sports Arenas and the South United Sports Foundation, with more companies being confirmed.





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Permanent Slide Preparation
Honours 2 Credits Activity 2016-2017

Course Content

This activity will train students in permanent slide preparation skills. It will equip and motivate the participants with advanced techniques in slide preparation.


Project work involves

- Introduction Permanent Slides
- Significance of Permanent Slides
- Methods and methodologies in slides preparation
- Basics of Plant stem anatomy
- Monocot and Dicot plant stem transvers section
- Differential staining techniques
- Permanent slide preparation (min. 10 slides submission)

Evaluation: On the basis of skill for making permanent slide and written report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF BOTANY

Open Ended Project

Study of *in-vitro* pollen germination and pollen viability in *Allamanda cathartica*-

&

Solvent extraction and study of absorption spectrum of photosynthetic pigments

Honours 2 Credits Activity 2016-2017

Course Content

The prime aim of this project is to develop research skills

Project undertaken will involve

- **Study of *in-vitro* pollen germination and pollen viability in *Allamanda cathartica*-**
 - Introduction to Pollen viability
 - Morphology and value of *Allamanda cathartica*
 - *In-vitro* pollen germination process as a whole
 - The growth rate of pollen tubes in *Allamanda*.
 - Investigate the optimum conditions for pollen tube growth.

- **Solvent extraction and study of absorption spectrum of photosynthetic pigments**
 - Introduction to plant pigments
 - Methods in solvent extraction
 - Absorption spectrum
 - Investigate Absorption spectrum for various plant leaves.

Evaluation: Written project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Synthesis And Isolation Of Some Organic Compounds: An Analytical Approach
Honours 2 Credits Activity 2016-2017

Course Content

Some of the most commonly used reagents are simple organic compounds which can be synthesized easily in laboratories. Their natural counterparts can also be used as substitutes under given conditions. Many of the organic compounds generally used are biochemical compounds / molecules which can be easily isolated from natural sources.

Project work involves

- Synthesis and
 - Isolation of organic compounds from natural sources
 - Characterisation
 - Alternate economically viable methods of synthesis
-
- Evaluation: On the basis of labwork, viva-voce and report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Research Project in Pharmaceutical Chemistry

Honours 2 Credits Activity 2016-2017

Course Content

❑ Objective

The prime aim of this project is to develop novel methods for antibiotic drug formulation using spectrophotometric technique which are simple, selective, precise, accurate, rapid and cost effective. These methods can be applied for routine quality control analysis and can be used for its quantitative determination from different antibiotic pharmaceutical drug formulation.

❑ The outline of the research project was as follow:

- ✓ Development of novel methods
- ✓ Analytical method Validation using ICH guidelines
- ✓ Statistical calculations
- ✓ Quantification by using Simultaneous Equation and Absorbance Ratio Method.

❑ Evaluation

Written project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Research Project in Food and Environmental Chemistry

Honours 2 Credits Activity 2016-2017

Course Content

- ❖ The prime aim of this project was to study and evaluate different aspects of food and environmental chemistry from perspective of safety and wellbeing of mankind.

The project includes two parts:

Water analysis and Food analysis

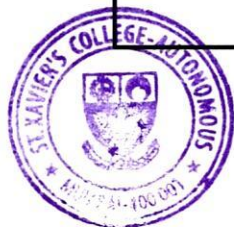
❖ Water analysis:

- All the essential parameters (According to The Environmental Protection Agency Act, 1992) to be studied.
- Collection of Water samples from the different parts of Mumbai
- Standardization and analysis of various methods for these samples
- **Parameters for all the water samples to be tested in laboratory**
- Acidity
- Alkalinity
- Salinity
- Dissolved Chlorine
- TDS
- Sulphate content
- COD, BOD, DO,
- Nitrite Content and Fe Content.
- **Comparative study of different samples of water**

Page 1 of 2

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

❖ Food analysis:

- The main objective is to do the Comparative Study and Qualitative Analysis of Different Brands of Cold Drinks Available in Market.
- For the analysis purpose five different brands of cold drinks namely, Coke, Pepsi, Sprite, Fanta and AppyFizz will be studied.

➤ Instrumental and non-instrumental methods to study.

➤ Parameters to be studied for analyzing cold drinks samples

- pH
- Carbon dioxide
- Glucose, phosphate (Instrumental and Non-Instrumental Method)
- Alcohol, and Sucrose content.


➤ Comparative study of all cold drink samples

❖ MODE OF EVALUATION: Written Project Report

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Estimation Of Copper Extracted From An Ayurvedic Drug Tamra Bhasm By Various
Analytical Techniques
Honours 2 Credits Activity 2016-2017

Course Content

❖ Objective of the course

The aim of the project is to orient the students with understanding that appropriate selection of the analytical technique for analysis of the sample is very crucial.

Copper forms the major constituent of "Tamra bhasma", an ayurvedic formulation.

❖ Project work involves

Analysis of "Tamra bhasma"

- ✓ Using Atomic Absorption Spectrophotometer (AAS)
- ✓ Electroanalytical technique (DPP)
- ✓ Volumetric titration – Cu (II) EDTA titration
- ✓ Electrogravimetry
- ✓ Use of analytical tool ANOVA and importance of uncertainty and its effect on the end result.

- **Evaluation** Written project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinda
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Research Methodology And Analytical Techniques (Basic)

Honors' 2 Credits Activity for 2016-17

offered by

Caius Research Laboratory

Course Content

Description: The course involves introducing students to Design of Experiment and application of analytical techniques to research.

The course will involve the following:

1. Introduction to good laboratory practice and safety in lab
2. Introduction to concepts of research
3. Calibration of micropipette
4. Testing accuracy of pipetting and use of UV Spectrophotometer
5. Concept of Mole and preparation of solutions
6. Understanding enzyme assay – assay of Amylase from Different sources like sweet potato
7. Qualitative assay of amylase on starch agar plate
8. Separation of amylase fraction by electrophoresis and zymogram assay

Evaluation: Continuous evaluation and report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity

Academic Year 2016-2017

Neurogenesis and Differentiation in Chick Retina

Course Content

Description:

The aim of the study is to understand Estradiol-mediated neurogenesis in the developing chick embryo system. The retina is a neural tissue that exhibits an elaborate neuronal architecture. Its development can be easily traced using histological, biochemical and molecular biology tools.

The course will involve the following:

- Exposure to research methodology
- Working with fertilized eggs and chick embryos
- Design experiments to study Estradiol-mediated neurogenesis in the developing chick embryo system
- Morphological observations of control (untreated) and treated chick embryos at various stages
- Dissect the retina at different stages and processing for histological studies.
- Electrophoretic evaluation of proteins from the embryonic eye.
- Result documentation
- Report writing

Evaluation: Continuous laboratory work evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity

Academic Year 2016-2017

Course Content

Fluorescent Studies of Oxidative Stress

Description:

The amount of ethanol produced during fermentation by yeast is limited by the toxicity of the ethanol to the yeast. Reactive Oxygen species production is known to be one of the major reasons for ethanol induced cell death. It would be interesting to investigate the role of ROS in yeast toxicity during ethanol fermentation.

The course will involve the following:

- Exposure to research methodology
- Microbiological techniques
- Culturing Yeast and maintaining yeast cultures
- Planning and conducting experiments to monitor alcohol induced cell death in 2 Yeast strains viz *Saccharomyces cerevisiae* and another one isolated from a fruit (J3).
- Study development of reactive oxygen stress in alcohol exposed yeast by labelling cells with ROS sensitive fluorescent dye 2,4 dichlorodihydrofluorescein diacetate.
- Use of a fluorescent microscope to enumerate ROS positive cells.
- Result compilation and analysis
- Report writing

Evaluation: Continuous evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity

Academic Year 2016-2017

Life in a Drop - II - Identification and Classification

Course Content

Description:

Students will be exposed to research methodology through sample collection, handling and microscopic analysis of water samples from various sources.

The course will involve the following:

- Exposure to research methodology
- Collecting and processing water samples from various sources.
- Analyzing the diversity of life in a single drop of water based on the water source and other environmental parameters.
- Microscopic study to identify and classify the observed microorganisms on the basis of their morphological characteristics.
- Creating a photo gallery of observations
- Report Writing

Evaluation: Continuous evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours 2 credits activity

Academic Year 2016-2017

Nutritional Assessment of Students in St. Xavier's College, Mumbai

Course Content

Description:

Students will be able to design a Survey questionnaire and collect data on the dietary habits of individuals and the food items served in the college canteen, with a view to implement healthy changes.


The course will involve the following:

- Exposure to survey-based research study
- Design questions to study of the nutritional status of staff and students of St. Xavier's College (Autonomous), Mumbai
- Conduct the survey to collect data on the dietary habits of individuals
- Conduct the survey to collect data of the food items served in the college canteen
- Analyze the data collected
- Suggest ways to implement healthy changes in both
- Report Writing

Evaluation: Continuous evaluation and Report writing.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF MICROBIOLOGY

Animal tissue culture

Honours 2 Credits Activity 2016-2017

Course Content

❖ Introduction

Animal tissue culture is a major tool in basic research as well as in modern medicine. Some of the important areas in which cell culture plays a key role are cancer research, toxicity testing, virology, immunology, cytogenetics, stem cell biology, drug screening and gene therapy. The workshop is designed to provide a thorough understanding of this technique through theory sessions and laboratory exercises.

❖ Topics to be covered

The course will focus on practical aspects, such as design and layout of the cell culture laboratory, aseptic techniques, media preparation, methods for measuring viability, sub-culturing, cryopreservation, revival and cytotoxicity.

The course will focus on practical aspects of Animal Tissue Culture.

- ✦ Design and layout of the cell culture laboratory
- ✦ Aseptic techniques and media preparation
- ✦ Revival of cryopreserved cells
- ✦ Methods for measuring viability
- ✦ Sub-culturing and cryopreservation,
- ✦ Cytotoxicity assays.
- ✦ Primary culture of chick embryo fibroblasts

❖ **Mode of Assessment:** Written exam on practical aspects of the course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



St. Xavier's College (Autonomous) -
Mumbai

Syllabus For
**DIPLOMA IN FORENSIC SCIENCE
& CRIMINAL LAW**



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

DIPLOMA IN FORENSIC SCIENCE AND CRIMINAL LAW

Learning Objectives of the Diploma in Forensic Science and Criminal Law:

- To provide an introduction and orientation to the functioning of the Indian Criminal Justice delivery system, and the role forensic science plays in this process.
- To hone the basic skills necessary for forensic science investigations.
- To develop a critical understanding of the diverse institutions of 'crime' control.
- To demonstrate competency in the collection, processing, analyses, and evaluation of evidence.

Learning Outcomes of the Diploma in Forensic Science and Criminal Law:

- Should be able to demonstrate competency in the principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence.
- Should be able to demonstrate an understanding of the scientific method and the use of problem-solving within the field of forensic science.
- Should be able to identify the role of the forensic scientist and physical evidence within the criminal justice system.
- Should be able to demonstrate the ability to document and orally describe crime scenes, physical evidence, and scientific processes.
- Should be able to identify and examine current and emerging concepts and practices within the forensic science field.

Course Units and Credits

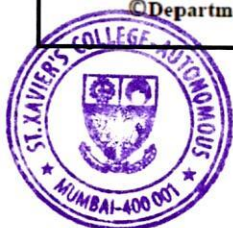
SEMESTER	UNIT NO	UNIT NAME	CREDIT POINTS
1	SXC-DFSCCL-01	The Basics of Crime Scene Investigation	4
1	SXC-DFSCCL-02	Ethics and Research Methods in Forensic Science	4
1 & 2	SXC-DFSCCL-03	The Functioning of the Indian Judicial System: Crime Scene to Court Room	4
2	SXC-DFSCCL-04	Impression Evidence	4
1	SXC-DFSCCL-05	Introduction to Forensic Serology	4
2	SXC-DFSCCL-06	Forensic DNA Analysis	4
2	SXC-DFSCCL-07	Microbial Forensics and Forensic Immunology	4
1	SXC-DFSCCL-08	Forensic Toxicology and Medicine	4
1 & 2	SXC-DFSCCL-09	Emerging Trends in Forensic Science	4
1 & 2	SXC-DFSCCL-10	Research Case Study and Moot Court	6

©Department of Zoology, St. Xavier's College

Page 2 of 8

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

UNIT 1

➤ THE BASICS OF CRIME SCENE INVESTIGATION (10 lectures)

An introduction of the application of science to solving crime

- Definition, Specializations in Forensics, Basic structure of Forensic Labs in India
- Mechanics of Justice and the Justice Triangle
- Locard's Exchange Principle
- Concepts of Identification, Individualization, Classification, Exclusion, Evidential Value
- Types of Physical evidence
- Processing & Investigation
- Defining the crime scene; Basic processing methodology
- Evidence recognition
- Documentation techniques
- Packaging, storage and transportation of evidence
- Control Samples, Scientific and Legal integrity of evidence

➤ Assessment Modalities

- Mock Crime Scene Practical (30%)
- Assignment (20%)
- Mock Test (10%)
- End of Unit Examination (40%)

UNIT 2

➤ ETHICS AND RESEARCH METHODS IN FORENSIC SCIENCE (12 lectures)

There are three interrelated modules

- Ethics in Forensic Science – the necessity for a professional ethical code in the practice of forensic science and describes the ethical conflicts that can arise when working in this profession.
 - Introduction to Quality, Competency & Ethics
 - Quality Control and Quality Assurance
 - Laboratory Standards; Accreditation and Certification
 - Quality of an Individual
 - Ethics in Forensic Science
- Research Methods in Forensic Science – the relevance and application of the scientific method in modern forensic science, including formulating research questions, applying the appropriate research methodology and making recommendations based on the analysed result.
 - Various components of the Scientific Method
 - Effective scientific communication through scientific writing and oral presentations
 - Critical Analysis of a Forensic Case Study

©Department of Zoology, St. Xavier's College



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Page 3 of 8
Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Application of Statistics in Forensic Science –the use and interpretation of statistics as a tool in analysing forensic data.

➤ **Assessment Modalities**

- Class Debate – Group based Activity (20%)
- Forensically Applicable Statistics Assignment (10%)
- Literature Review (15%)
- End of Unit Examination (50%)
- Attendance (5%)

UNIT 3

➤ **THE FUNCTIONING OF THE INDIAN JUDICIAL SYSTEM: CRIME SCENE TO COURT ROOM** (15 lectures)

An examination of the nature and purposes of criminal law along with the basic elements of criminal offences.

- Understand how a FIR and Panchnama are filed
- The hierarchy of the Court system in India
- Basic elements of an offence and their analysis
- Process of a Criminal Trial– from arrest of the suspect to sentencing
- The role of the forensic scientist as an expert witness
- Admissibility of forensic evidence

➤ **Assessment Modalities**

- Assignment on the application of relevant laws to a mock case scenario (20%)
- Mock Tests (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 4

➤ **IMPRESSION EVIDENCE** (12 lectures)

An outline of how markings are produced when one object comes into contact with another, leaving behind some kind of indentation or print known as impression evidence. Such evidence encountered includes footwear impressions, tyre marks, and markings created by tools and similar instruments.

- Introduction to Fingerprints and Biometrics
 - Basic principles of fingerprint analysis, comparison and identification
 - Introduction to biometric systems of identification
- Introduction to Firearms and Ballistics
 - Parts and Types of firearms, mechanism of firing a weapon
 - Forensic evidence left at the crime scene
 - Reconstruction of crime scenes involving firearms
- Introduction to Other Impression Evidences
 - Questioned Document Examination & Signature Verification





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Explain the forensic significance of class and individual characteristics to the comparison of tool mark, footwear, and tire impressions

➤ **Assessment Modalities**

- Fingerprint Practical (15%)
- Questioned Document Practical (15%)
- End of Unit Examination (60%)
- Attendance (10%)

UNIT 5

➤ **INTRODUCTION TO FORENSIC SEROLOGY**

(10 lectures)

The application of the study of blood, semen, saliva and other body fluids, to legal matters.

- Body fluids found at crime scenes
 - Introduction to body fluids; related crime scenes
 - General crime scene processing methodologies
- Blood
 - Composition: Basic blood genetics
 - Forensic analysis of blood evidence
 - Blood spatter analysis – blood flight characteristics, types of BSP, crime scene reconstructions
- Semen and Sexual Assault Cases
 - Composition of semen; sexual assault and rape crime scenes
 - Examination of the victim
 - Forensic analysis of semen stains
- Other Body Fluids
 - Forensic analysis of Saliva
 - Forensic analysis of Urine

➤ **Assessment Modalities**

- Blood Spatter Practical (15%)
- Body Fluids Practical (15%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 6

➤ **FORENSIC DNA ANALYSIS**

(15 lectures)

The basics of cell biology and DNA analysis, and its application to investigations and the judicial system. Special reference is made to the application of forensic DNA technology to prosecutions, defences and exonerations.

- DNA – definition, importance, sources, types of crime scenes; historical perspective
- Short Tandem Repeats; Low copy number DNA; Y chromosomal analysis; Mitochondrial DNA
- CODIS – Combined DNA Index System

©Department of Zoology, St. Xavier's College

Page 5 of 8



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

[Signature]
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- DNA evidence processing – Collection, Extraction, RFLP v/s PCR, Separation techniques, Output data interpretation
 - Problems in DNA Analysis; Mixtures of DNA
 - Paternity Testing- Genetic Systems used for Paternity Tests
 - Statistics & Population Genetics – Hardy Weinberg Equilibrium
- **Assessment Modalities**
- Power point Presentation (25%)
 - Mock Tests (15%)
 - End of Unit Examination (60%)

UNIT 7

- **MICROBIAL FORENSICS AND FORENSIC IMMUNOLOGY (15 lectures)**
Microbial Forensics combines principles of public health epidemiology and law enforcement to identify patterns in a disease outbreak, determine which pathogen may be involved, and trace the organism to its source.
- Differences between Bio crimes and Bioterrorism
 - Biosecurity & Microbial Forensics – types of biological agents, collection, preservation and analysis of these biological agents during investigation
 - Management of biological threats – evaluate biosecurity threats and implementation of resolution through microbial forensics analytical techniques
- **Assessment Modalities**
- PowerPoint Presentation (25%)
 - Assignment (10%)
 - Mock tests (10%)
 - End of Unit Examination (50%)
 - Attendance (5%)

UNIT 8

- **FORENSIC TOXICOLOGY AND MEDICINE (15 lectures)**
There are three interrelated modules
- Forensic Toxicology – an introduction to toxicological samples, including their presumptive and confirmation testing in a variety of biological materials. A comprehensive, pharmacological and analytical review of some major alcohol and drug classes is taught.
 - Forensic Medicine – an overview of the protocols of the mortuary and crime scene, the medico-legal autopsy and post-mortem changes relevant to the solving of a crime.
 - Forensic Anthropology & Odontology – how information gathered from skeletal and dental materials can be used to determine the age, sex and stature of an individual, while providing evidence of pathology and/or trauma.
- **Assessment Modalities**
- Class Discussion related to Forensic Medicine (10%)

Department of Zoology, St. Xavier's College



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Page 6 of 8
[Signature]
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Toxicology Practical (20%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 9

➤ **EMERGING TRENDS IN FORENSIC SCIENCE** (15 lectures)

Advances in technology as well as society's growing dependence on technology have changed the way in which crime is investigated and the types of crimes committed, with a notable increase in cybercrime offences.

- Cyber Crime Investigation
 - Understanding cyber forensics
 - Cyber Law
 - Electronic crime scene investigation (electronic evidence; internet; networks)
 - Digital Privacy
 - Types of cyber crime
- Integrating forensic techniques into incident response
- Recent advances - forensic accounting, forensic engineering, forensic psychology

➤ **Assessment Modalities**

- Cyber Forensics Practical (20%)
- Forensic Psychology Practical (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 10

➤ **RESEARCH CASE STUDY AND MOOT COURT** (15 lectures)

Independent research into a topic in the field of forensic science supported by lectures taught during the course. Students are trained to give scientific expert witness testimony in their chosen topics.

➤ **Assessment Modalities**

- Literature Review (20%)
- Case Study Research Report (40%)
- Moot Court (40%)

Practical Course:

1. Investigation and Processing of a Mock Crime Scene
2. Questioned Document Examination
3. Fingerprint Processing, Analysis and Identification
4. Blood Spatter Analysis on various surfaces
5. Body Fluids Analysis – saliva and blood
6. Toxicological Analysis of Drugs using Thin Layer Chromatography

©Department of Zoology, St. Xavier's College

Page 7 of 8



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

Recommended References:

- Casey, E. (2011). *Digital evidence and computer crime: Forensic science, computers, and the internet*. Academic press.
- Houck, M. M., & Siegel, J. A. (2009). *Fundamentals of forensic science*. Academic Press.
- Fisher, Barry, A. J., Tilstone, W. J. & Woytowicz, C. (2009). *Introduction to Criminalistics: The Foundation of Forensic Science*. Elsevier Academic Press.
- Robertson, B., Vignaux, G. A., & Berger, C. E. (2016). *Interpreting evidence: evaluating forensic science in the courtroom*. John Wiley & Sons.
- Saferstein, R. (2013). *Criminalistics*. Pearson Education.

#####

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

INTRODUCTION TO BIOINFORMATICS

Honours 2 Credits Activity 2016-2017

Course Content

The importance of Bioinformatics in Biology today cannot be stressed enough. This course aims to introduce students to the field of Bioinformatics and develop key basic skills.

- ❖ **Topics include** [30L]
- ❑ **Introduction to the concept of Databanks and Databases** [3 L]
 - What is the difference between a Databank and a Database?
 - Introduction to the user interface of public access Databanks – NCBI, EBI, DDBJ
 - Different types of Databanks for specific purposes used in Bioinformatics
- ❑ **Use of various resources for answering specific questions** [10 L]
 - Access to scientific literature on Databanks
 - Methods to search and download DNA & Protein sequences
 - Sequence alignment – Global and Local alignments
 - Data interpretation
- ❑ **Phylogenetic Analysis** [8 L]
 - Various algorithms used in Phylogenetic Analysis
 - Creation of phylogenetic trees using various methods
 - Interpretation of Data
- ❑ **In-Silico structure prediction** [5 L]
 - Use of online software's for converting Amino acid sequence into 3D co-ordinates of amino acids
 - Visualization of proteins using a visualization software – Chimera will be taught
 - Data interpretation
- Project and presentation of data** [4 lecs]

Deinde



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

**5, Mahapalika Marg, Mumbai - 400 001,
INDIA.**

☎ 2262 0661/65

2015 - 2016



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

STUDY OF EPIGRAPHY AND NUMISMATICS OF INDIA

○ **Objective:**

- This is a course deals with development of the study of scripts and coinage in ancient India which enable a student to utilise the sources to reconstruct the past. The course will be dealt with the help of Literary, Archaeological, Numismatic and Epigraphic evidences for a holistic view of the facets of Indian culture.

○ **Content:**

- Introduction to Epigraphy
 - Aims, scope and definition of epigraphy
 - Origin and development of different scripts with special reference to Indus script, Brahmi, Kharoshthi
 - Indian eras (Shaka, Vikrama, Gupta, Chedi-Kalchuri)
- Ancient Indian Scripts
 - Brahmi
 - Kharoshthi
 - Persian
 - Introduction to post-ancient scripts for referencing and development of these ancient Indian scripts
- Introduction to Numismatics
 - Aims, scope and definition of numismatics
 - Medium of exchange
 - Techniques of manufacturing
- Coinage
 - Janapada (PMC & EUCC), Indo-Greek-Parthian- Scythian
 - Western Ksatrapas, Kushan, Satavahana, Tribal coins
 - Gupta, Pallavas, Chola and Cheras
 - Delhi Sultanate and Greater Mughal Coins

Bibliography:

1. Allan, J. 1935. Catalogue of Coins of Ancient India. London: British Museum.
2. Allchin, F.R. and K.R. Norman. 1985. "Guide to the Ashokan Inscriptions". South Asian Studies.

Certificate Course

Alkonde



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

3. Altekar, A.S. 1957. Coinage of the Gupta Empire. Varanasi: Numismatic Society of India.
 4. Epigraphia Indica Vols. I-X.
 5. Gupta, P.L. 1979. (2nd Revised Edition) Coins. New Delhi: National Book Trust.
 6. Gupta, P.L. 1981. Coins: Source of Indian History. Ahmedabad: B.J. Institute of Learning and Research.
 7. Hultzch.D. 1969. (Reprint) Corpus Inscriptionum Indicarum Vol.I, Varanasi: Indological Book House.
 8. Mangalam, S.J. 1990. Kharoshthi Script. Delhi: Eastern Book Linkers.
 9. Pandey, R. 1957. Indian Palaeography. Delhi: Motilal Banarsidas.
 10. Rajor, Dilip 2001. Punch-marked Coins of Early Historical India. California. Resha Books International.
 11. Sircar, D.C. 1965. Indian Epigraphy. Delhi: Motilal Banarsidas.
 12. Sircar, D.C. 1986. (3rd edition) Select Inscriptions. Vol.I, Delhi: Asian Humanities Press.
- *****

Certificate Course

Shinde



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

HISTORY OF PERFORMING ARTS AND THEATRE IN INDIA

○ **Objective:**

- In an endeavour to further the holistic understanding of Ancient Indian Culture in all the parameters the attempt of this Paper aims to provide a sound grounding in understanding the nuances of performing arts. Focus, will be on the theoretical understanding and the relevance of the same in the realm of studying the essence of Ancient Indian culture. Whether they are sculptures, Art, Architecture, or Paintings, performing arts (Music and Dance traditions) is an innate part of the same. The attempt of this course is to enlighten the student to this synergy between fluid and static arts, this way broadens their horizon and innate understanding of the subject Ancient Indian Culture.

○ **Content:**

- **Sources for tracing the development of Performing arts in Ancient India**
 - Literary Sources: - Specific Study of Natyashastra , Abhinaya Darpana, Vishnu Dharmottra Purana with reference to the Origin and the development of the arts.
 - Document and study the references of Performing arts in the Literary Works of Sacred and Secular.
 - Contribution of Epics, in documenting the development of Performing arts.
 - Study the development of Archaeological sources in documenting the development of performing arts. Specific references, to Brihadeeshwara temple, Chidambaram, Sun Temple in Konark, Ramappa Temple in Warangal. Study the development of the same in the context to Paintings, both Frescoes and Murals.
- **Music**
 - Understanding the elements of Music- Nad, Shruti, Swara, Saptak.
 - Studying the Structure of a Raga- Genesis- Tat, Jati, Vadi, Samvadi, Varjit Swara, Samay Chakra, The importance of Tala (Both Carnatic and Hindustani). A brief idea of the concept and constituents of Khyal and Gath in Instrumental music.

Certificate Course

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

- A study of the basic features and Structure of Gharanas (Hindustani Music) in Khyal Gayaki. Contribution and life history of famous musicians of the Gharanas.
- A study of the basic features of Carnatic Music. The forms of Kirtana, Kreethi , Javali. A study of the life history and contribution of the Trinity to Carnatic music.
- Forms and styles of Vocal performances:-
 - Dhrupad, Dhamar , Khyal, Tarana, Tappa, Thumri, Dadra, Hori
- Classification and study the contribution of Instrumental music In India.
- Material and Technology of musical instruments
- **Dance**
 - The Study of the elements and structure of Dance.:-
 - The concept of Nrta, Nrithya and Natya.
 - Study of Abhinaya- Angika, Vachika, Aharaya and Sattvika.
 - The study of Vrittis
 - Construction of a stage.
 - The study of Rasa and Bhava. :-
 - The Nayak and Nayika bhed
 - The understanding of Natyadharmi and Lokadharmi
 - Thandav and Lasya styles of performances
 - Study of the famous classical dances of India and study the life history of famous dancers and their dance schools with their contribution.
 - Study the famous folk dances from the States of India and their contribution.
 - Garba, Lavani, Kollatam. Lezium, Lambada, Dhimsa, Siddhi, Bihui, Pulikali, Koli dance, Kavadi, Ghumar, Burrakatha, Jatra
 - Material and Technology of costumes and props Material and Technology of the tangible aspects of folk art
- **Traditional Indian Theatre**
 - The development of Tradition Indian Theatre



Certificate Course

[Signature]

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

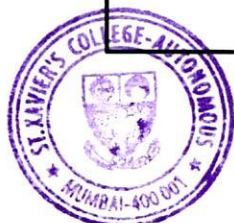
☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

- Kutiyattam, Yakshanagana, Bhagvatamela natakam, Bhavai, Yatra, Tamasa, Chau
- Traditional Indian Puppetry.
- A critical study of the situation of performing arts today. Their contribution.
 - Media
 - Music and Dance universities and degrees
 - Popular culture- Role of Cinema, College festivals, Organizations and sabha
- **Bibliography:**
 1. Vatsyayan Kapila (1968) Classical Indian Dance in Literature and the Arts, Sageet Natak akademi
 2. Nair Rajeev (2007) A Rasika's journey Through Hindustani Music, Indialog publications pvt ltd
 3. Rao Appa P.S.R and Sastry Rama P (1997) Bharata's Natya Shastra, A naatya mala publication
 4. Coomaraswamy Ananda, (1987) A mirror of Gesture, Munshiram Manoharlal Publishers pvt ltd
 5. Coomaraswamy Ananda (1987) Dance Of Shiva, Munshiram Ma noharlal Publishers pvt ltd
 6. Rangacharya Adya (1971) The Indian Theatre, National Book Trust of India
 7. Kishore B.R (Dr) (1988) Dances of India, Diamond Pocket Books
 8. Rao Krishna U.S (1980) A Dictionary of Bharata Natya, Orient Longman publication
 9. Sarabhai Mrlani (1981) Understanding Bhararatanatyam , Ther Darpana Academy of Performing arts
 10. Tarlekar G.H, (1975) Studies in the Natya Shastra, Motilal Banarsidass publication.
 11. Gosh Manmohan (1975) Nandikesvara Abhinayadarpanam, Manisha Granthalaya Pvt limited
 12. Bagchee Sandeep (1992) Nad Understanding Raga Music, Business Publication Pvt ltd

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

13. Sangeetha Natya Kala Sanhrama (1985) Kal;asadan publication Mumbai.
 14. Subrahmanyam Padma.Dr (1979) Bharatas art then and now, Nrithyodaya, Madras
 15. Subrahmanyam Padma .Dr (2003) Karanas Common Dance codes of India and Indonesia, Nrithyodaya Chennai
 16. Sawra Bharati, (2011) Dance and Dance Traditions , Bharatiya Vidya Bhavan publication
 17. Bhatkande Sangeet Shastra- Hatras publication (5 volumes)
 18. Classical Dances in India- Bharatiya Vidya Bhavan Publication
 19. Swara Bharati (2011) Dance and Dance traditions- Bharitya Vidya Bhavan
 20. Sangeet Visharad- Hatras Publication.
-

Certificate Course



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Shinde
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

Maritime Heritage of Ancient India

○ **Objectives:**

- This course is recommended to understand the maritime tradition which existed in India from the proto-historic period. This course will help understand the impact of this traditional heritage on the cultural history of India.

○ **Content:**

- **Introduction to Indian Maritime Trade**
 - Sources (Literary ,Oral, Archaeological)
 - Trade Routes (Land and sea)
 - Satavahanas and Trade Guilds
- **Maritime Trade in early India**
 - Ports and Ship yards and types of ship on the western and the eastern coast of India. (Marine archaeology)
 - Blue Water trade
 - White Water Trade
 - Introduction to marine archaeological conservation
- **River Economy**
 - Trading centers and merchant guilds.
 - Trade and river system in Northern and central India.
 - Trade and river system in Deccan and South India.
- **Trade In Early Medieval Period**
 - Trade with South and South East Asia.
 - East Asian Trade
 - Early European Trade

○ **Bibliography:**

1. Begley, Vimala and Richard Daniel de Puma, 1992, Rome and India: The Ancient Sea Trade. Delhi
2. Begley, Vimala, 1996, The Ancient Port of Arikamedu- New Excavation and researches 1989-1992- Pondicherry.
3. Boussac, Marie- Francoise and Jean Francois Salles, 1995: Essays on the Interrelations between India, Arabia and the Eastern Mediterranean, New Delhi.
4. Chakravarti Ranabir (ed) 2001, Trade in Early India. Oxford.

Certificate Course

Shinde
PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.

NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai.

Department of Ancient Indian History, Culture and Archaeology

5. Chamoakalakshmi. R, 1996, Trade, Ideology and Urbanisation. Delhi.
6. Chandra Moti, 1977, Trade and Trade Routes in Ancient India, New Delhi.
7. Gogte, V.D.2000. Indo- Arabian Maritime Contacts during the Bronze Age: Scientific Study of pottery from Ras al-Junayz (Oman), Adumatu, Issue no.2 (July), 7-14.
8. Jain V.K 1990, Trade and traders in western India, New Delhi.
9. Lahiri Nayanjot, 1992, The Archaeology of India Trade Routes (up to 200B.C), Delhi.
10. Liu Xinria,1988, Ancient India and Ancient China- Trade and Religious Exchanges, Delhi.
11. Ray Himanshu Prabha, 2003, The Archaeology Of Seafaring in Ancient South Asia, Cambridge.
12. Vohra N.N, (ed) 2002 India and East Asia Culture and Society, Delhi

Certificate Course

Shinde

PRINCIPAL

ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF PSYCHOLOGY

Research Paper Writing and Presentation at Khandala Seminar on
Learning And Memory
Honours 2 Credit Activity 2015-2016

Course Write-up

- This is a voluntary activity that psychology students of fy, sy and ty can enrol for. Work begins in August and culminates in January.
- A broad theme is agreed upon after brainstorming with students. Each student chooses a specific topic (within that theme) to write their seminar paper on.
- They receive a two hour initial training on how to decide on specific topic for their seminar paper. They are taught basic research and reference skills. Then students need to work on their own time (involving more than 15 hours of work, usually during the diwali vacation) to create a literature review and outline for their paper.
- They will consult with the teaching staff (they have chosen as their guides) to organize and refine their written paper to be submitted. Final year students who have had experience with this activity are also available to mentor the students doing this for the first time.
- Enrolled students also receive one hour training on effective presentation skills before the seminar.
- The presentation happens in front of a group of peers and staff at the annual Khandala seminar that spans one and a half days (and includes around 15 contact hours of work at Khandala). This entails presentation of one's own paper and attending and giving feedback on others' papers.

Page 1 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinda

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65




ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

- There are numerous **advantages** to such an activity as a learning experience for both the student presenters (who learn about research skills and presentation skills) and the student audience (who learn by observing both good and average presentations).
- There is a specific kind of set induction for this seminar which results in a sense of meaningfulness, interest and enthusiasm on the part of students.
- A mastery orientation rather than a performance orientation is encouraged. Everyone learns to give honest, constructive feedback according to specific criteria provided related to the content and style of presentation.
- The final grade on the certificate given by the department takes into account the effectiveness of the presentation, the quality of the written paper and collated audience feedback.
- Using feedback obtained from students over the years, this paper takes a critical look at the **strengths and challenges** of such an activity, from a pedagogical point of view.
- The **presentation sessions** last 45 minutes each with 30 minutes for the speaker and 15 minutes for audience interaction, discussion and feedback.
- Since PPTs are not used, students are encouraged to know their content thoroughly and to find other creative ways of enhancing their presentation and holding the attention of their peers.

Page 2 of 2



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF INTER-RELIGIOUS STUDIES

**Joy Of Self Discovery
Honours 2 Credit Activity 2015-2016**

Course Content


Sessions on

Dates: 5, 6, 7, 8, 9, and 10th July 2015 from 2.30 to 6.30 pm in XIMR

- Creative Meditation
- Journaling
- Approaches of Spiritual/ Scientific/ Tribal traditions
- 15th July 2015: Visit to Asha Daan
- 30th July 2015: Presentation of Creative Assignment



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF INTER-RELIGIOUS STUDIES

**Awaken To Cosmic Compassion
Honours 2 Credit Activity 2015-2016**

Course Content

At a time when the accelerating pace of Climate Change is threatening to wipe out even the human race it is imperative that we work out alternatives to the present consumerist lifestyle and capitalist development schemes.

Sessions

14 Sept. 3 to 7 pm - EXPOSURE VISIT: LISTEN to the Cry of the Earth

16 Sept to 18 Sept 3 pm 7 pm: Weekend Workshop at Koshimbi.

3 Oct 3-5 pm: Presentation of Creative Assignment



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF MASS MEDIA
Partners for Urban Knowledge and Research (PUKAR)
Honours 2 Credit Activity 2015-2016

Course Content

Research as a tool for Perspective Building, Knowledge Production, Community Engagement & Advocacy

- 1 Orientation Workshop
 - a. Understanding self
 - b. Working with the groups
 - c. Understanding social systems
- 2 Community Based Participatory Action Research (CBPAR)
 - a. What is social science research?
 - b. Types of research
 - c. Understanding CBPAR
- 3 Ethics in Social Science Research
 - a. Genesis of ethics in research
 - b. Importance of ethics in social science research
 - c. Operationalising ethics in research design (application and challenges)
- 4 Literature Review
 - a. Importance of reviewing literature
 - b. Different types of literature
 - c. How to conduct review
 - d. Appropriate citation, annotation and bibliography
- 5 Types of Research Methods
 - a. Survey
 - b. Observation
 - c. Interviews
 - d. Focus Group Discussion
 - e. Photography and Videography
 - f. Mapping



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE
(AUTONOMOUS)
5, Mahapalika Marg, Mumbai - 400 001,
INDIA.
☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

6 Social Perspective Building

- a. Gender
- b. Communal harmony
- c. Environment.
- d. Right To Information

7 Communication Skills

- a. Effective communication
- b. Empathetic listening

8 Data Collection

Quantitative approach

Introduction to descriptive statistics-Mean, Mode and Median. Graphical representation of data using bar charts, line graph and pie charts.

Qualitative approach

Importance of reading through the data carefully and culling out emerging themes, thematic analysis, content analysis,

9 Analysis, Synthesis and Drawing Conclusions

What is analysis, importance of analysis and its relationship with the hypothesis, how to do the analysis and how to draw conclusions based upon the analysis.

10 Report Writing


Importance of writing good report, - structure, content, language, annotations.
Format of report:- Abstract, introduction, review of literature, methodology, results and discussions, conclusion, recommendation, bibliography and appendix if needed.

11 Dissemination of Research Findings

Importance of dissemination of findings, sharing with stakeholders from the community and creating advocacy for and interventions in the community would be expected from the group research.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

**Bio-Synthesis Of Silver Nanoparticles And Study Of Their Size Selectivity And
Stability With Different Capping Agents.
Honours 2 Credits Activity 2015-2016**

Course Content

- Project involves**
 - ✓ Use of environmentally benign techniques for bio-synthesis of silver nanoparticles
 - ✓ Use of different Capping agents
 - ✓ Particles size dispersity as well as stability
 - ✓ Use of different instrumentation techniques
 - ✓ The effect of concentration of both the capping agent and the nano-precursor on morphology
 - ✓ Determination of size distribution of metallic nanoparticles
 - ✓ Optimisation of conditions for monodispersity in the particle size

- Evaluation:** Project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Alinda
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY


Development and Validation of an Antimicrobial Agent/S from a Combined
Pharmaceutical Drug Formulation using Spectrophotometry
Honours 2 Credits Activity 2015-2016

Course Content

- The aim of this project is to develop novel methods for combined pharmaceutical drug formulation having antimicrobial activity.
- Project involves
 - UV-VIS SPECTROPHOTOMETRY
 - Analytical method validation using ICH guidelines
 - Statistical calculations
 - Quantification using Simultaneous Equation and Absorbance Ratio Method.
- Evaluation
 - Written project report.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF CHEMISTRY

Lecture Series In Retrosynthesis and Reaction Mechanism
A Certificate Course 2015-16

Course Content

Topics Covered

- Organic reaction mechanisms**
 - ✓ Organic reactive intermediates, methods of generation, structure, stability
 - ✓ Investigation of reaction mechanisms, kinetic and stereochemical evidence
 - ✓ Thermodynamic and kinetic control of organic reactions

- Retrosynthesis**
 - ✓ Grounding of organic chemistry for understanding retrosynthesis
 - ✓ Transformations in Retrosynthesis: Functional Group Interconversion, Functional Group Addition and Functional Group Removal
 - ✓ Retrosynthetic analysis and designing of the synthesis;
 - ✓ Disconnection approach: An introduction to synthons, synthetic equivalents, disconnection approach, and examples of functional group interconversions

- Assessment**
 - Written Test



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours activity (2015-2016)

2 credits

Open-ended Experimentation

Course Content

Description:

This course is designed to trigger lateral thinking in students early in their academic career, before they are bogged down with "correct" protocols and so-called "right" way of doing experiments in the lab.

The course will involve the following:

- Work in groups
- Plan and design experiments on common scientific principles
- Record observations and results
- Presentation of results
- Defend interpretation

Evaluation: Continuous Evaluation and Viva



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours activity (2015-2016)

2 credits

Screening of Natural Sources for Inhibition of Biofilm Formation

Course Content

Description:

The student will study biofilm formation by a soil isolate, the factors affecting the biofilm formation and screen for inhibitors of biofilm formation.

The course will involve the following

- Microbial media preparation
- Maintain a microbial culture
- Aseptic techniques
- Culturing microorganisms
- Designing and planning experiments to study biofilm formation
- Staining and microscopic techniques to observe biofilms
- Study effect of pH, temperature and nanoparticles on Biofilm formation
- Data Analysis
- Report writing

Evaluation: Continuous Evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours activity (2015-2016)

2 credits

Use of Fluorescence Microscopy to Study 'Reactive Oxygen Species (ROS)'
Stress in Ethanol producing Yeast

Course Content

Description:

The student will study ROS formation in yeast cells in presence of various concentration of ethanol using fluorescent dye and fluorescence microscopy.

The course will involve the following

- Yeast media preparation
- Aseptic techniques and culturing microorganisms
- Maintain a yeast culture
- Designing and planning experiments to study ROS production in presence of increasing ethanol concentrations (up to 20%)
- Labelling cells with 2',7' -dichlorofluorescein diacetate (DCFDA)
- Fluorescent microscopic techniques to enumerate ROS producing cells
- Data Analysis
- Report writing

Evaluation: Continuous Evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours activity (2015-2016)

2 credits

A Study of the Effects of Stress on *Chironomus* Larvae.

Course Content

Description:

This course will involve designing and performing experiments to study the effect of tobacco leaf extract on *Chironomus* larvae in the presence and absence of green tea extract.


The course will involve the following

- Handling *Chironomus* larva
- Designing experiments
- Monitoring parameters of larval viability in presence of tobacco leaf extract
- Study the effect of green tea extract treatment on larval viability and activity
- Compare the effects of tobacco leaf extract in absence and presence of green tea extract treatment.
- Data Compilation and analysis
- Report Writing

Evaluation: Continuous Evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

St. Xavier's College (Autonomous), Mumbai

5, Mahapalika Marg, Mumbai-400 001

DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY

Honours activity (2015-2016)

2 credits

A study of: a. Reproductive Fitness, and,
b. Hypoxic Induction of Mega Hemoglobin in *Daphnia*

Course Content

Description:

The aim of this course is to design and perform experiments to study hypoxia and reproductive fitness in *Daphnia* when cultured in presence of different protein sources.

The course will involve the following:

- Study *Daphnia* as a model system
- Growing and maintaining *Daphnia* in the laboratory
- Follow the viability and metabolic parameters of *Daphnia* when grown in different protein supplements.
- Compare and analyze the data.
- Report writing

Evaluation: Continuous Evaluation and Report writing



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF MICROBIOLOGY

Animal tissue culture

Honours 2 Credits Activity 2015-2016

Course Content

❖ Introduction

Animal tissue culture is a major tool in basic research as well as in modern medicine. Some of the important areas in which cell culture plays a key role are cancer research, toxicity testing, virology, immunology, cytogenetics, stem cell biology, drug screening and gene therapy. The workshop is designed to provide a thorough understanding of this technique through theory sessions and laboratory exercises.

❖ Topics to be covered

The course will focus on practical aspects, such as design and layout of the cell culture laboratory, aseptic techniques, media preparation, methods for measuring viability, sub-culturing, cryopreservation, revival and cytotoxicity.

The course will focus on practical aspects of Animal Tissue Culture.

- ✦ Design and layout of the cell culture laboratory
- ✦ Aseptic techniques and media preparation
- ✦ Revival of cryopreserved cells
- ✦ Methods for measuring viability
- ✦ Sub-culturing and cryopreservation,
- ✦ Cytotoxicity assays.
- ✦ Primary culture of chick embryo fibroblasts

❖ **Mode of Assessment:** Written exam on practical aspects of the course

PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65




St. Xavier's College (Autonomous) -
Mumbai

Syllabus For
**DIPLOMA IN FORENSIC SCIENCE
& CRIMINAL LAW**



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

DIPLOMA IN FORENSIC SCIENCE AND CRIMINAL LAW

Learning Objectives of the Diploma in Forensic Science and Criminal Law:

- To provide an introduction and orientation to the functioning of the Indian Criminal Justice delivery system, and the role forensic science plays in this process.
- To hone the basic skills necessary for forensic science investigations.
- To develop a critical understanding of the diverse institutions of 'crime' control.
- To demonstrate competency in the collection, processing, analyses, and evaluation of evidence.

Learning Outcomes of the Diploma in Forensic Science and Criminal Law:

- Should be able to demonstrate competency in the principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence.
- Should be able to demonstrate an understanding of the scientific method and the use of problem-solving within the field of forensic science.
- Should be able to identify the role of the forensic scientist and physical evidence within the criminal justice system.
- Should be able to demonstrate the ability to document and orally describe crime scenes, physical evidence, and scientific processes.
- Should be able to identify and examine current and emerging concepts and practices within the forensic science field.

Course Units and Credits

SEMESTER	UNIT NO	UNIT NAME	CREDIT POINTS
1	SXC-DFSCCL-01	The Basics of Crime Scene Investigation	4
1	SXC-DFSCCL-02	Ethics and Research Methods in Forensic Science	4
1 & 2	SXC-DFSCCL-03	The Functioning of the Indian Judicial System: Crime Scene to Court Room	4
2	SXC-DFSCCL-04	Impression Evidence	4
1	SXC-DFSCCL-05	Introduction to Forensic Serology	4
2	SXC-DFSCCL-06	Forensic DNA Analysis	4
2	SXC-DFSCCL-07	Microbial Forensics and Forensic Immunology	4
1	SXC-DFSCCL-08	Forensic Toxicology and Medicine	4
1 & 2	SXC-DFSCCL-09	Emerging Trends in Forensic Science	4
1 & 2	SXC-DFSCCL-10	Research Case Study and Moot Court	6





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

UNIT 1

➤ THE BASICS OF CRIME SCENE INVESTIGATION (10 lectures)

An introduction of the application of science to solving crime

- Definition, Specializations in Forensics, Basic structure of Forensic Labs in India
- Mechanics of Justice and the Justice Triangle
- Locard's Exchange Principle
- Concepts of Identification, Individualization, Classification, Exclusion, Evidential Value
- Types of Physical evidence
- Processing & Investigation
- Defining the crime scene; Basic processing methodology
- Evidence recognition
- Documentation techniques
- Packaging, storage and transportation of evidence
- Control Samples, Scientific and Legal integrity of evidence

➤ Assessment Modalities

- Mock Crime Scene Practical (30%)
- Assignment (20%)
- Mock Test (10%)
- End of Unit Examination (40%)

UNIT 2

➤ ETHICS AND RESEARCH METHODS IN FORENSIC SCIENCE (12 lectures)

There are three interrelated modules

- Ethics in Forensic Science – the necessity for a professional ethical code in the practice of forensic science and describes the ethical conflicts that can arise when working in this profession.
 - Introduction to Quality, Competency & Ethics
 - Quality Control and Quality Assurance
 - Laboratory Standards; Accreditation and Certification
 - Quality of an Individual
 - Ethics in Forensic Science
- Research Methods in Forensic Science – the relevance and application of the scientific method in modern forensic science, including formulating research questions, applying the appropriate research methodology and making recommendations based on the analysed result.
 - Various components of the Scientific Method
 - Effective scientific communication through scientific writing and oral presentations
 - Critical Analysis of a Forensic Case Study





Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Application of Statistics in Forensic Science –the use and interpretation of statistics as a tool in analysing forensic data.

➤ **Assessment Modalities**

- Class Debate – Group based Activity (20%)
- Forensically Applicable Statistics Assignment (10%)
- Literature Review (15%)
- End of Unit Examination (50%)
- Attendance (5%)

UNIT 3

➤ **THE FUNCTIONING OF THE INDIAN JUDICIAL SYSTEM: CRIME SCENE TO COURT ROOM** (15 lectures)

An examination of the nature and purposes of criminal law along with the basic elements of criminal offences.

- Understand how a FIR and Panchnama are filed
- The hierarchy of the Court system in India
- Basic elements of an offence and their analysis
- Process of a Criminal Trial– from arrest of the suspect to sentencing
- The role of the forensic scientist as an expert witness
- Admissibility of forensic evidence

➤ **Assessment Modalities**

- Assignment on the application of relevant laws to a mock case scenario (20%)
- Mock Tests (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 4

➤ **IMPRESSION EVIDENCE** (12 lectures)

An outline of how markings are produced when one object comes into contact with another, leaving behind some kind of indentation or print known as impression evidence. Such evidence encountered includes footwear impressions, tyre marks, and markings created by tools and similar instruments.

- Introduction to Fingerprints and Biometrics
 - Basic principles of fingerprint analysis, comparison and identification
 - Introduction to biometric systems of identification
- Introduction to Firearms and Ballistics
 - Parts and Types of firearms, mechanism of firing a weapon
 - Forensic evidence left at the crime scene
 - Reconstruction of crime scenes involving firearms
- Introduction to Other Impression Evidences
 - Questioned Document Examination & Signature Verification





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Explain the forensic significance of class and individual characteristics to the comparison of tool mark, footwear, and tire impressions

➤ **Assessment Modalities**

- Fingerprint Practical (15%)
- Questioned Document Practical (15%)
- End of Unit Examination (60%)
- Attendance (10%)

UNIT 5

➤ **INTRODUCTION TO FORENSIC SEROLOGY** (10 lectures)

The application of the study of blood, semen, saliva and other body fluids, to legal matters.

- Body fluids found at crime scenes
 - Introduction to body fluids; related crime scenes
 - General crime scene processing methodologies
- Blood
 - Composition: Basic blood genetics
 - Forensic analysis of blood evidence
 - Blood spatter analysis – blood flight characteristics, types of BSP, crime scene reconstructions
- Semen and Sexual Assault Cases
 - Composition of semen; sexual assault and rape crime scenes
 - Examination of the victim
 - Forensic analysis of semen stains
- Other Body Fluids
 - Forensic analysis of Saliva
 - Forensic analysis of Urine

➤ **Assessment Modalities**

- Blood Spatter Practical (15%)
- Body Fluids Practical (15%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 6

➤ **FORENSIC DNA ANALYSIS** (15 lectures)

The basics of cell biology and DNA analysis, and its application to investigations and the judicial system. Special reference is made to the application of forensic DNA technology to prosecutions, defences and exonerations.

- DNA – definition, importance, sources, types of crime scenes; historical perspective
- Short Tandem Repeats; Low copy number DNA; Y chromosomal analysis; Mitochondrial DNA
- CODIS – Combined DNA Index System





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- DNA evidence processing – Collection, Extraction, RFLP v/s PCR, Separation techniques, Output data interpretation
- Problems in DNA Analysis; Mixtures of DNA
- Paternity Testing- Genetic Systems used for Paternity Tests
- Statistics & Population Genetics – Hardy Weinberg Equilibrium

➤ **Assessment Modalities**

- Power point Presentation (25%)
- Mock Tests (15%)
- End of Unit Examination (60%)

UNIT 7

➤ **MICROBIAL FORENSICS AND FORENSIC IMMUNOLOGY (15 lectures)**

Microbial Forensics combines principles of public health epidemiology and law enforcement to identify patterns in a disease outbreak, determine which pathogen may be involved, and trace the organism to its source.

- Differences between Bio crimes and Bioterrorism
- Biosecurity & Microbial Forensics – types of biological agents, collection, preservation and analysis of these biological agents during investigation
- Management of biological threats – evaluate biosecurity threats and implementation of resolution through microbial forensics analytical techniques

➤ **Assessment Modalities**

- PowerPoint Presentation (25%)
- Assignment (10%)
- Mock tests (10%)
- End of Unit Examination (50%)
- Attendance (5%)

UNIT 8

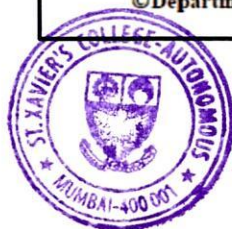
➤ **FORENSIC TOXICOLOGY AND MEDICINE (15 lectures)**

There are three interrelated modules

- Forensic Toxicology – an introduction to toxicological samples, including their presumptive and confirmation testing in a variety of biological materials. A comprehensive, pharmacological and analytical review of some major alcohol and drug classes is taught.
- Forensic Medicine – an overview of the protocols of the mortuary and crime scene, the medico-legal autopsy and post-mortem changes relevant to the solving of a crime.
- Forensic Anthropology & Odontology – how information gathered from skeletal and dental materials can be used to determine the age, sex and stature of an individual, while providing evidence of pathology and/or trauma.

➤ **Assessment Modalities**

- Class Discussion related to Forensic Medicine (10%)





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

- Toxicology Practical (20%)
- Mock Tests (10%)
- End of Unit Examination (60%)

UNIT 9

➤ EMERGING TRENDS IN FORENSIC SCIENCE (15 lectures)

Advances in technology as well as society's growing dependence on technology have changed the way in which crime is investigated and the types of crimes committed, with a notable increase in cybercrime offences.

- Cyber Crime Investigation
 - Understanding cyber forensics
 - Cyber Law
 - Electronic crime scene investigation (electronic evidence; internet; networks)
 - Digital Privacy
 - Types of cyber crime
- Integrating forensic techniques into incident response
- Recent advances - forensic accounting, forensic engineering, forensic psychology

➤ Assessment Modalities

- Cyber Forensics Practical (20%)
- Forensic Psychology Practical (20%)
- End of Unit Examination (50%)
- Attendance (10%)

UNIT 10

➤ RESEARCH CASE STUDY AND MOOT COURT (15 lectures)

Independent research into a topic in the field of forensic science supported by lectures taught during the course. Students are trained to give scientific expert witness testimony in their chosen topics.

➤ Assessment Modalities

- Literature Review (20%)
- Case Study Research Report (40%)
- Moot Court (40%)

Practical Course:

1. Investigation and Processing of a Mock Crime Scene
2. Questioned Document Examination
3. Fingerprint Processing, Analysis and Identification
4. Blood Spatter Analysis on various surfaces
5. Body Fluids Analysis – saliva and blood
6. Toxicological Analysis of Drugs using Thin Layer Chromatography





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65

Syllabus for the Diploma course in Forensic Science. St. Xavier's College (Autonomous) - Mumbai

Recommended References:

- Casey, E. (2011). *Digital evidence and computer crime: Forensic science, computers, and the internet*. Academic press.
- Houck, M. M., & Siegel, J. A. (2009). *Fundamentals of forensic science*. Academic Press.
- Fisher, Barry, A. J., Tilstone, W. J. & Woytowicz, C. (2009). *Introduction to Criminalistics: The Foundation of Forensic Science*. Elsevier Academic Press.
- Robertson, B., Vignaux, G. A., & Berger, C. E. (2016). *Interpreting evidence: evaluating forensic science in the courtroom*. John Wiley & Sons.
- Saferstein, R. (2013). *Criminalistics*. Pearson Education.

#####





ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

Basic Astrobiology

Honours 2 Credits Activity 2015-2016


Course Content

- Introduction to the field of Astrobiology, historical perspective
- Interdisciplinary nature of astrobiology
- Defining life
- Origin and Evolution of life on Earth
- Origin and Evolution of solar system
- Stellar evolution
- Habitable zones: definition, features, formation, search
- Intelligent life
- Various methods to look for exoplanets and search for life's presence
- Field trip: Overnight sky observation

Assessment: On the basis of attendance, tests and the field visit report



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

DNA Damage and Repair
Honours 2 Credits Activity 2015-2016

Course Content

Damage and Repair is a specially designed course for students interested in Molecular Biology.

Topics to be covered [30L]

- **Causative Agents of DNA Damage** [12 lecs]
Radiation, Intracellular Metabolism (free Radicals), Oxidative stress, genotoxic agents, ionising radiations, Chemicals
- **Types of DNA Damage** [7 lecs]
T-T dimer (DNA crosslinking), alkylation of bases, Hydrolysis of bases, adduct formation, DNA strand breaks
- **DNA repair** [11 lecs]
Base excision repair (BER), Nucleotide Excision Repair (NER), Mismatch repair (MMR), Homologous recombination, Non-homologous End joining (NHEJ).

Assessment: The students will be graded on the basis of their attendance and performance in the test.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent

Abhinda
PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.



ST. XAVIER'S COLLEGE

(AUTONOMOUS)

5, Mahapalika Marg, Mumbai - 400 001,
INDIA.

☎ 2262 0661/65



ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI

DEPARTMENT OF ZOOLOGY

ORNITHOLOGY AND HERPETOLOGY

Honours 2 Credits Activity 2015-2016

Course Content

Students will learn about the Taxonomy, Classification and Biology of Reptiles (Snakes) and Birds through lectures and field trips. A lecture course cum field visit will be conducted

❖ Topics to be covered in the course


- Introduction to Ornithology (Study of birds)
- Classification and characteristics of birds
- Taxonomy and identification of birds
- A brief introduction to the use and types of binoculars
- A brief introduction to migration of birds
- Introduction to Herpetology (Study of reptiles)
- Classification and characteristics of reptiles (specifically snakes)
- Difference between poisonous and non-poisonous snakes
- Myths about snakes
- Taxonomy and identification of snakes
- Field trip to study the practical aspects of the theory and to observe birds, snakes and other reptiles in nature.
- Submission of the report on the trip

❖ Assessment

On the basis of a field report and overall performance and participation during the course.



NAAC SSR Cycle 4 (2015-2020) :
1_3_2_ValueAdded_CourseContent


PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.