HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2023-2024

	General Information of the Activity	
1.	**Department and Hub**	Life Science and Biochemistry Biological Sciences Hub
2.	**Title of the Activity**	**Cytogenetic and toxicity studies on mitotic cell division of *Allium cepa* root tips (Experimental Honours)**
3.	**Name of the Professors taking the course and Email address**	Dr. Priya Sundarrajan priya.s@xaviers.edu
4.	**Name/s of the Resource person/s**	Dr. Priya Sundarrajan
5.	**Name of the Dept Coordinator and Email address**	Dr. Manasi Kanuga manasi.kanuga@xaviers.edu
6.	**Name of the Hub Coordinator and Email address**	Dr. Priya Sundarrajan priya.s@xaviers.edu
7	**Number of credits for the activity and number of hours**	3 credits 45 hours
8	**Fees**	2500/-
9	**Eligibility**	SY/TY students of all biology
10	**Number of students**	4-5
11	**Duration and Time**	Yearlong till March/April

	Details of the Activity
1	**Title: Cytogenetic and toxicity studies on mitotic cell division of *Allium cepa* root tips (Experimental Honours)**
2	**Learning Objectives:** a. To inculcate in students the spirit of inquiry, observation and research b. To encourage students to carry out cytogenetic analysis of *Allium cepa* c. To study the chromosomal abnormalities due to environmental pollutants like heavy metals d. To introduce the use of instruments such as microscope and understand its functions
3	**Learning Outcomes:** After completing the course students will be able to: a. Learn to handle microscope and observe various specimens b. Observe and enumerate the chromosomal abnormalities due to various environmental pollutants.
4	**Description** This project involves setting up cultures of onion root tip. The cells of root tip will be analyzed for mitotic and phase indexes as well as chromosomal aberrations in the interphase and mitotic phase when subjected to different environmental pollutants.
5.	**Evaluation:** Continuous participation and work, Preparation of report and Viva
6.	**Modules if any: None**

HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2023-2024

	General Information of the Activity	
1.	**Department and Hub**	Life Science and Biochemistry Biological Sciences Hub
2.	**Title of the Activity**	**INFOGRAPHICS FOR BIOTECHNOLOGY**
3.	**Name of the Professor taking the course**	Dr. Sangeeta Shetty sangeeta.shetty@xaviers.edu
4.	**Name/s of the Resource person/s**	Dr. Rafeeque Mavoor Scientific Illustrator, IISER Pune
5.	**Name of the Dept Coordinator and Email address**	Dr. Manasi Kanuga
6.	**Name of the Hub Coordinator and Email address**	Dr. Priya Sundarrajan
7	**Number of credits for the activity and number of hours**	Credit: 01 Number of hours-15
8	**Fees**	500
9	**Eligibility**	SYBSC / TYBSC students of Biological Sciences
10	**Number of students**	max 08, min 05
11	**Duration and Time**	3 months

	Details of the Activity
1	**Title: INFOGRAPHICS FOR BIOTECHNOLOGY**
2	**Learning Objectives:** **The objectives of this assignment are to train students to:** a. Demonstrate understanding of course content. b. Synthesize concepts to create new information. c. Practice communicating information clearly. d. Practice research and citation. e. Demonstrate technical proficiency with graphic design tools.
3	**Learning Outcomes:** Through an infographic assignment the student will be able to: a. Create knowledge b. Curate information c. Communicate through visuals and writing d. Critically analyze the data e. Digital literacy- for the tools needed to represent data effectively
4	**Description** An infographic is a highly visual representation of information, data, or content that is intended to quickly communicate information to a reader. Smaller than, but similar to a poster, an Infographic often communicates a central argument, topic, or thesis focusing on the overall patterns, themes, or salient points. An infographic is often designed using graphic design software. Photoshop, PowerPoint, and Word can be used, however, new online digital tools for Infographic creation are increasingly popular. Examples include Canva, Piktochart, or Infogr.am.
5	**Modules if any** none

HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2023-2024

	General Information of the Activity	
1.	**Department and Hub**	Life Science and Biochemistry Biological Sciences Hub
2.	**Title of the Activity**	Toxicity Testing in Vertebrate Models Systems
3.	**Name of the Professor taking the course**	Dr Radhika Tendulkar radhika.tendulkar@xaviers.edu
4.	**Name/s of the Resource person/s**	Dr Radhika Tendulkar
5.	**Name of the Dept Coordinator and Email address**	Dr. Manasi Kanuga manasi.kanuga@xaviers.edu
6.	**Name of the Hub Coordinator and Email address**	Dr. Priya Sundarrajan priya.s@xaviers.edu
7	**Number of credits for the activity and number of hours**	Three credits, 45 hours
8	**Fees**	Rs 2000/- (Two Thousand rupees)
9	**Eligibility**	SY students of Life science
10	**Number of students**	Maximum 10 students
11	**Duration and Time**	October 2023 to April 2024

	Details of the Activity
1	**Title:** Toxicity Testing in Vertebrate Model Systems
2	**Learning Objectives:** 1. To introduce the students to various vertebrate model organisms used in Biology 2. To train students to design and conduct experiments in Biology. 3. To acquaint the students to techniques used in histological studies.
3	**Learning Outcomes:** At the end of the course the students will be able to: 1. Design, plan and execute time-bound experiments using model organisms. 2. Maintain lab note-books and collect and interpret experimental data. 3. Appreciate the systematic investigative approaches used in research laboratories to answer scientific questions. 4. Communicate scientific findings in a formal manner.
4	**Description:** The course aims at testing/screening putative teratogens using chick / Zebrafish embryos as model system. 1. Studying embryonic development of the model system using videos and permanent slides. 2. Procuring and maintaining the model organism in the lab for experimental purpose. 3. Treatment with teratogen and morphological observations. 4. Processing whole mounts/sections of embryo specimens for staining and staging. 5. Observation and documentation of prepared slides 6. Writing a detailed report based on the results obtained.
5	**Modules, if any:** 1. Introduction to vertebrate embryonic development 2. Maintenance of model organisms 3. Histological processing and analysis of embryonic specimens 4. Documentation and formal presentation of results

HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2023-2024

	General Information of the Activity	
1.	**Department and Hub**	Life Science and Biochemistry Biological Sciences Hub
2.	**Title of the Activity**	Emotional Distraction and Cognition – A Correlational Study
3.	**Name of the Professor taking the course**	Dr Radhika Tendulkar radhika.tendular@xaviers.edu
4.	**Name/s of the Resource person/s**	Dr Radhika Tendulkar
5.	**Name of the Dept Coordinator and Email address**	Dr Manasi Kanuga, manasi.kanuga@xaviers.edu
6.	**Name of the Hub Coordinator and Email address**	Dr Priya Sunderrajan priya.s@xaviers.edu
7	**Number of credits for the activity and number of hours**	Two credits, 30 hours
8	**Fees**	Rs 1000/- (One Thousand rupees)
9	**Eligibility**	SY or TY students of Life science
10	**Number of students**	Maximum 10 students
11	**Duration and Time**	October 2023 to April 2024

	Details of the Activity
1	**Title:** Emotional Distraction and Cognition – A Correlational Study
2	**Learning Objectives:** 4. To train students to design and conduct experiments in Biology, within the ethical framework. 5. To acquaint the students to techniques used in cognitive analysis.
3	**Learning Outcomes:** At the end of the course the students will be able to: 5. Design, plan and execute time-bound experiments. 6. Design questionnaires to collect data for analysis. 7. Appreciate the systematic investigative approaches used in research laboratories to answer scientific questions. 8. Communicate scientific findings in a formal manner.
4	**Description:** The study will be conducted in the following manner: 7. Design a questionnaire to evaluate volunteers and identify some common emotional distractors among the youth. 8. Design an informed consent form for volunteers participating in the study 9. Identifying cognitive tests for the study. 10. Non-invasive software-based cognitive testing in presence / absence of emotional distractors, in volunteers. 11. Analysis of data based on gender and age of recruited individuals.
5	**Modules, if any:** 5. Introduction to brain functioning with reference to Cognition 6. Designing a questionnaire for analyzing Emotional Quotient 7. Analyzing cognitive ability with suitable tests in the presence / absence of emotional distractors

HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2023-2024

	General Information of the Activity	
1.	**Department and Hub**	Life Science & Biochemistry Biological Sciences Hub
2.	**Title of the Activity**	Survey-based Research: Nutrition & Lifestyle
3.	**Name of the Professor taking the course**	Dr Maya Murdeshwar maya.murdeshwar@xaviers.edu Dr Manasi Kanuga manasi.kanuga@xaviers.edu
4.	**Name/s of the Resource person/s**	Dr Maya Murdeshwar Dr Manasi Kanuga
5.	**Name of the Dept Coordinator and Email address**	Dr Manasi Kanuga manasi.kanuga@xaviers.edu
6.	**Name of the Hub Coordinator and Email address**	Dr Priya Sundarrajan priya.s@xaviers.edu
7	**Number of credits for the activity and number of hours**	3 credits (45 hours)
8	**Fees**	Rs.1000/- (Rupees one thousand only)
9	**Eligibility**	SY and TY students from biological sciences
10	**Number of students**	6
11	**Duration and Time**	Throughout the year

	Details of the Activity
1	**Title:** Survey-based research: Nutrition & Lifestyle
2	**Learning Objectives:** 1. Design and conduct survey-based research. 2. Analyze dietary and lifestyle trends across diverse strata of society. 3. Present results in the form of a scientific report and research article. 4. Present scientific data in the visual format.
3	**Learning Outcomes:** Participants will 1. Learn qualitative research methodology: designing, conducting and analyzing surveys. 2. Perform relevant statistically analysis of the results. 3. Gain insights into the dietary and lifestyle trends over time. 4. Learn to present scientific data visually and in text format.
4	**Description** Students will survey the dietary and lifestyle status of survey participants from diverse age-groups and compile a report of the dietary and lifestyle trends across diaspora. They will be trained in qualitative research methodology and analysis, including designing survey questionnaires, applying relevant statistical tests to the obtained results and presenting them in scientific visual as well as text formats. Evaluation will be based on attendance, engagement throughout the activity period and the written report/ research article and PowerPoint presentation.
5	**Modules if any** None

Interdisciplinary Honours:

HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2023-2024

	General Information of the Activity	
1.	**Department and Hub**	Life Science and Biochemistry Biological Hub/Interdisciplinary
2.	**Title of the Activity**	**To prepare a graphical abstract for a scientific paper**
3.	**Name of the Professors taking the course and Email address**	Dr. Priya Sundarrajan priya.s@xaviers.edu
4.	**Name/s of the Resource person/s**	NIL
5.	**Name of the Dept Coordinator and Email address**	Dr. Manasi Kanuga manasi.kanuga@xaviers.edu
6.	**Name of the Hub Coordinator and Email address**	Dr. Priya Sundarrajan priya.s@xaviers.edu
7	**Number of credits for the activity and number of hours**	2 credits 30 hours
8	**Fees**	750/-
9	**Eligibility**	SY and TYBSc students of All Science Departments
10	**Number of students**	10
11	**Duration and Time**	3 months

	Details of the Activity (To prepare a graphical abstract)
1	**Title:** To prepare a graphical abstract for a scientific paper
2	**Learning Objectives:** Most of the journals need graphical abstract for the article to be published. The proposed activity will help the student to: a. Read a recent paper on his / her topic of interest. b. Will push the student to cross reference to have a better understanding of the nuances of the study. c. Allow the student to blend their creativity and technical skills.
3	**Learning Outcomes:** b. the student will comprehend the results of the study. c. the students will be able to convey the message of the research paper in a clear and effective manner. d. the student will be confident in using the online software used to make Graphical abstracts.
4	**Description** A Graphical abstract is a visual representation of a scientific study. It helps in understanding the summary of the paper at a glance. Most of the journals have made graphical abstracts mandatory for the article to be published. This HONORS Certificate Program aims to train the students to make Graphical abstracts.
5.	**Evaluation:** Continuous, Graphical abstract made and Presentation on the abstract made
6.	**Modules if any: None**

HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2023-2024

	General Information of the Activity	
1.	**Department and Hub**	Life Science & Biochemistry Biological Sciences Hub/ Interdisciplinary
2.	**Title of the Activity**	Book Review (Interdisciplinary activity)
3.	**Name of the Professor taking the course**	Dr Maya Murdeshwar maya.murdeshwar@xaviers.edu
4.	**Name/s of the Resource person/s**	Dr Maya Murdeshwar
5.	**Name of the Dept Coordinator and Email address**	Dr Manasi Kanuga manasi.kanuga@xaviers.edu
6.	**Name of the Hub Coordinator and Email address**	Dr Priya Sundarrajan priya.s@xaviers.edu
7	**Number of credits for the activity and number of hours**	2 credits (30 hours)
8	**Fees**	Rs.500/- (Rupees five hundred only)
9	**Eligibility**	SY and TY students from any discipline
10	**Number of students**	10
11	**Duration and Time**	5 months (Aug. – Dec. 2023)

	Details of the Activity
1	**Title:** Book Review
2	**Learning Objectives:** 1. The programme will discuss the basic tenets of writing a Book review. 2. Book reviews for different platforms (publishing house, newspaper, e-marketing platforms) will be reviewed. 3. Oral narration of the review to a layperson audience will be explored.
3	**Learning Outcomes:** Participants will 5. Gain insights into the fundamentals of book review writing. 6. Learn to critically analyze the contents of a book and write a balanced review on it. 7. Learn to modify the review for a newspaper/ publishing house/ e-marketing platform. 8. Sharpen their presentation skills by narrating their review in an interesting and enticing manner in the Book Club.
4	**Description** Students are expected to select a non-fiction book in a subject area of their choice, read, critically evaluate and write a review. The tenets of writing a Book Review will be explained by the activity in-charge. A Book Club will be held at the end, with each student sharing their review with others and rating the book. Evaluation will be based on attendance at the monthly meetings and the written book review.
5	**Modules if any** None

HONOURS CERTIFICATE PROGRAMME PROPOSAL
AY 2021-2022

	General Information of the Activity	
1.	**Department and Hub**	Life Science & Biochemistry Biological Sciences Hub/ Interdisciplinary
2.	**Title of the Activity**	**Student perception of STEM education and career opportunities in India**
3.	**Name of the Professor taking the course**	Dr. Sangeeta Shetty sangeeta.shett@xaviers.edu Dr. Binoj Kutty binoj.kutty@xaviers.edu
4.	**Name/s of the Resource person/s**	Dr. Sangeeta Shetty Dr. Binoj Kutty
5.	**Name of the Dept Coordinator and Email address**	Dr. Manasi Kanuga manasi.kanuga@xaviers.edu
6.	**Name of the Hub Coordinator and Email address**	Dr. Priya Sundarrajan priya.s@xaviers.edu
7	**Number of credits for the activity and number of hours**	Credit: 02 Number of hours-30
8	**Fees**	500
9	**Eligibility**	TY BMS/ BMM/ BSc students
10	**Number of students**	04
11	**Duration and Time**	3 months

	Details of the Activity
1	**Title: Student perception of STEM education and career opportunities in India**
2	**Learning Objectives:** **The objectives of this assignment are to train students to:** a. To assess the perceptions of STEM careers and opportunities among teachers, parents and students. b. Examine the influence of teachers on the students` choice of science subjects for future career in STEM. c. Identify the challenges/barriers faced by students studying STEM subjects.
3	**Learning Outcomes:** Through this survey assignment the student will be able to: a. Outline the research problem, decide on the sample size and the target population of respondents. b. Prepare an effective questionnaire that will help gauge the barriers / factors that influence the student's decision to take up higher education / career in science. c. Apply statistical and management principles to evaluate the responses. d. Interpret and discuss possible modifications / measures that can be taken to improve student enrollment in science.
4	**Description** Student perceptions of a subject/ field play an important role in their career choices. Currently in India the number of students pursuing higher education in STEM subjects is on a decline. Though the Central Government has instituted schemes such as DST INSPIRE and others to motivate students towards higher education in science, educators feel that these are not enough. Higher levels of scientific literacy should be made available to all students regardless of age/ sex/ caste etc. This study aims to understand the barriers and the perceptions of the students towards these subjects and careers in them. This will help the Higher education institutions in planning their curriculum as well outreach reach programs in both rural and urban areas.
5	**Modules if any** a. Preparation of questionnaire b. Sending out the survey c. Analyzing the results