**University of Kerala**

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|---|---|---|---|---|---|
| Discipline | **ZOOLOGY** | | | | |
| Course Code | **UK4VACZOO201** | | | | |
| Course Title | **Communication and Popularisation of Life Sciences** | | | | |
| Type of Course | **VAC** | | | | |
| Semester | IV | | | | |
| Academic Level | 200 - 299 | | | | |
| Course Details | Credit | Lecture per week | Tutorial per week | Practical per week | Total Hours/Week |
| | 3 | 2 hours | - | 2 hours | 4 |
| Pre-requisites | Pass in class XII | | | | |
| Course Summary | This course equips the students with essential knowledge and skills for effectively communicating life sciences topics to diverse audiences. Through exploration of various scientific information sources and communication platforms, participants learn to utilize written, oral, visual, and digital modes for public engagement and outreach. Emphasis is placed on structured scientific writing, hypothesis preparation, and presentation strategies to ensure effective communication to both expert and non-expert audiences, with practical skills honed through workshops and practice sessions. | | | | |

**Detailed Syllabus**

| Module | Unit | Content | 30 hrs |
|---|---|---|---|
| I | | **Introduction to Life Sciences** | **5** |
| | 1.1 | Definition, Branches, Scope and Significance of Life Sciences | 2 |
| | 1.2 | Organizations promoting Life Science - Employment opportunities – CSIR, ICAR, ICMR, DST, DBT, MoES, MoEF, IISER, ISRO (Brief Description) | 3 |

| | | | |
|---|---|---|---|
| **II** | **Sources of Scientific (Life Sciences) Information** | | **5** |
| | 2.1 | Offline platforms– Peer reviewed Journal articles (Mention Predatory Journals), reviews, conference proceedings, edited books, Policy documents, official reports (official govt. or public agency and NGO sources), Recorded speeches (TED Talks), Encyclopaedia, Magazines, Press releases and Seminars. | 3 |
| | 2.2 | Online Platforms- Google Scholar, Research gate, Pubmed and Scopus. | 2 |
| **III** | **Tools and techniques of Life Science Communication & Public Sensitisation** | | **10** |
| | 3.1 | Different modes of life science communication: written, oral, visual, and digital. | 2 |
| | 3.2 | Science outreach for biodiversity conservation: Flash mobs, dramas, street play, documentaries, public awareness talks, exhibitions, science journalism and advertisements. | 3 |
| | 3.3 | Online Science Communication- social media, websites, blogs, podcasts and You tube. | 2 |
| | 3.4 | Science Communication during disasters: Public engagement with science and technologies-Weather alert- INCOIS, NDMA, Kerala State Disaster Management Authority and GDACS (Brief explanation). | 3 |
| **IV** | **Writing for Life Sciences** | | **5** |
| | 4.1 | Structure and components of scientific papers: introduction, materials and methods, results, discussion, conclusion and Reference; Hypothesis - preparation for a research problem. | 2 |
| | 4.2 | Writing clear and concise scientific prose | 1 |
| | 4.3 | Literature review and citation practices | 1 |
| | 4.4 | Tips for effective scientific writing: avoiding plagiarism, ensuring clarity, and precision | 1 |
| **V** | **Presenting Scientific Research** | | **5** |
| | 5.1 | Principles of effective oral presentations: organization, delivery, using posters and visual aids | 2 |
| | 5.2 | Communicating complex scientific concepts to non-expert audiences/public | 1 |
| | 5.3 | Handling questions and engaging the audience during presentations. | 1 |
| | 5.4 | Presentation skills; workshops and practice sessions | 1 |

**References:**


1. Borchardt, J. K. (2019). Communicating Science: A Primer for Working with the Media. Island Press.
2. Cambridge University Press.
3. Engineering Communication. MIT Press, UK.
4. Gigante, E. Marie (2018). Introducing Science Through Images: Cases of Visual Popularization (Studies in Rhetoric/Communication), University of South Carolina P
5. Gregory, J., & Miller, S. (2015). Science in Public: Communication, Culture, and Credibility. Basic Books
6. Holliman, R., Whitelegg, E., Scanlon, E., Smidt, S., & Thomas, J. (Eds.). (2009). Investigating Science Communication in the Information Age: Implications for Public Engagement and Popular Media. Oxford University Press.
7. James G, Paradis and Muriel L. Zimmerman (2002). The MIT Guide to Science and Engineering Communication, Second Edition, The MIT press Publishers, 336pp.
8. Kothari. C.R (2023) Research Methodology. Methods and Techniques. New Age International (P) Limited, Publishers, New Delhi.
9. National Academy of Sciences, National Academy of Engineering, & Institute of Medicine. (2006). Communicating Science Effectively: A Research Agenda. National Academies Press.
10. Nicholas Russel (2009). Communicating Science: Professional, Popular, Literary. Cambridge University Press, 1st edition.
11. Ramesh, A. (2019). Science Communication: A Practical Guide for Scientists. Indian Academy of Sciences.


**Web Resources:**

1. https://www.aaas.org/programs/public-engagement/communicating-science-online
2. https://www.scidev.net/global/communication/
3. https://www.science.org/
4. https://www.ted.com/topics/science+communication
5. https://theconversation.com/us/science

**Practicum (30 hrs)**

| Sl. No. | Contents |
|---|---|
| 1 | Prepare a documentary / You tube video links on various disasters/ Pollution |
| 2 | Conduct a flash mob/ Drama to address any environmental issue. |
| 3 | Prepare scientific talks for the public on relevant topics on Life Science.<br>**OR**<br>Write Scientific papers on any topic related to life Science. |
| 4 | Plagiarism checking of the given scientific report and documenting using a suitable software.<br>**OR**<br>Preparation of posters / sign boards for giving awareness to public on any relevant topic related to life science |

## Course Outcomes

| No. | Upon completion of the course the graduate will be able to | Cognitive Level | PSO addressed |
|---|---|---|---|
| CO1 | Understand the definition and scope of life sciences and identify key organizations promoting life science research and development. | U | PSO1 |
| CO2 | Analyse the different sources of life science information, both online and offline platforms. | An | PSO2 |
| CO3 | Identify and evaluate different communication channels utilized in life sciences. | U, E | PSO2 |
| CO4 | Understand the importance of public sensitization on life science issues and demonstrate proficiency in selecting and implementing appropriate communication channels based on target audience characteristics, message content, and communication objectives. | U, Ap | PSO7 |
| CO5 | Utilize digital and social media platforms to disseminate scientific information and engage with the public. | Ap, C | PSO7 |
| CO6 | Write scientific papers, reports, and proposals suitable for both scientific and lay audiences. | Ap, C | PSO2 |
| CO7 | Deliver informative presentations of scientific research to diverse audiences on any relevant topic on life science. | Ap | PSO3 |

**R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create**

**Name of the Course: Communication and Popularisation of Life Sciences**
**Credits: 2:0:1 (Lecture: Tutorial: Practical)**

| CO No. | CO | PO/PSO | Cognitive Level | Knowledge Category | Lecture (L)/Tutorial (T) | Practical (P) |
|---|---|---|---|---|---|---|
| 1. | Understand the definition and scope of life sciences and identify key organizations promoting | PO1, PSO1 | U | F, C | L | |
| | life science research and development. | | | | | |
| 2. | Analyse the different sources of life science information, both online and offline platforms. | PO1, PSO2 | An | F, C | L | P |
| 3. | Identify and evaluate different communication channels utilized in life sciences. | PO1, PSO2 | U, E | C | L | P |
| 4. | Understand the importance of public sensitization on Life science issues and demonstrate proficiency in selecting and implementing appropriate communication channels based on target audience characteristics, message content, and communication objectives. | PO1, PO2 PSO7 | U, Ap | F | L | P |
| 5. | Utilise digital and social media platforms to disseminate scientific information and engage with the public. | PO6, PO7 PSO7 | Ap, C | P | | P |
| 6. | Write scientific papers, reports, and proposals suitable for both scientific and lay audiences. | PO4, PSO2 | Ap, C | P | | P |
| 7. | Deliver informative presentations of scientific research to diverse audiences on any relevant topic on life science. | PO4, PO 5 PSO3 | Ap | P | | P |

**F-Factual, C- Conceptual, P-Procedural, M-Metacognitive**

## Mapping of COs with PSOs and POs

| | PSO 1 | PSO 2 | PSO 3 | PSO4 | PSO 5 | PSO 6 | PSO 7 | PO1 | PO 2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO 1** | 2 | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - |
| **CO 2** | - | 2 | - | - | - | - | - | 2 | - | - | - | - | - | - | - |
| **CO 3** | - | 2 | - | - | - | - | - | 1 | - | - | - | - | - | - | - |
| **CO 4** | - | - | - | - | - | - | 2 | 1 | 2 | - | - | - | - | - | - |
| **CO 5** | - | - | - | - | - | - | 1 | - | - | - | - | - | 2 | 3 | - |
| **CO 6** | - | 1 | - | - | - | - | - | - | - | - | 2 | - | - | - | - |
| **CO 7** | - | - | 3 | - | - | - | - | - | - | - | 3 | 2 | - | - | - |

**Correlation Levels:**

| Level | Correlation |
|---|---|
| - | Nil |
| 1 | Slightly / Low |
| 2 | Moderate / Medium |
| 3 | Substantial / High |

**Assessment Rubrics:**

**Assignment /Seminar topics**

1. Compilation of TED talks.
2. Organizations promoting Life Sciences.
3. Finding Research Gaps using library resources.
4. Modes of Life Science Communication.
5. Role of social media for Life science Communication
6. Effective scientific writing
7. Scientific poster / chart preparation/ oral presentation.

**Continuous Comprehensive Assessment**

1. Quiz/ Debates
2. Assignment
3. Submission of report
4. Group discussion
5. Test
6. Open Book

**End Semester assessment**

1. Multiple choice question
2. Very short answer questions
3. Short answer questions
4. Practical Exam

**Mapping of COs to Assessment Rubrics:**

| | Internal Exam | Assignment | Project Evaluation | End Semester Examinations |
|---|---|---|---|---|
| CO 1 | ✓ | ✓ | | ✓ |
| CO 2 | ✓ | ✓ | | ✓ |
| CO 3 | ✓ | ✓ | | |
| CO 4 | | ✓ | | ✓ |
| CO 5 | | ✓ | | ✓ |
| CO 6 | | ✓ | | |
| CO7 | | ✓ | | ✓ |