आई सी एम आर – राष्ट्रीय व्यावसायिक स्वास्थ्य संस्थान
स्वास्थ्य अनुसंधान विभाग, स्वास्थ्य और परिवार
कल्याण मंत्रालय, भारत सरकार

ICMR - National Institute of Occupational Health
Department of Health Research, Ministry of Health
and Family Welfare, Government of India

संख्या 1/परिपत्र /2025-26/1228 September 8, 2025

परिपत्र/CIRCULAR

विषय: "Introduction to Bioinformatics" पर एक विशाल मुक्त ऑनलाइन पाठ्यक्रम (MOOC) – संबंधी

Sub: A Massive Open Online Course (MOOC) on "Introduction to Bioinformatics"--reg

ICAR-NAARM, हैदराबाद द्वारा पत्र दिनांक 02-09-2025 के माध्यम से "Introduction to Bioinformatics" पर एक विशाल मुक्त ऑनलाइन पाठ्यक्रम (MOOC) आयोजित किए जाने की सूचना दी गई है, जो 01 अक्टूबर से 30 नवम्बर, 2025 तक आयोजित होगा। इस संबंध में कार्यक्रम की रूपरेखा (brochure) एवं पत्र संलग्न है। ICAR-NAARM, Hyderabad vide their letter dated 02-09-2025 is inviting nominations for a **Massive Open Online Course (MOOC) on "Introduction to Bioinformatics"** being organized during **October 1st - November 30th, 2025 at ICAR-NAARM**. The programme brochure and covering letter for the same is attached for perusal.

संस्थान एवं केन्द्र के सभी इच्छुक वैज्ञानिकों एवं तकनीकी अधिकारियों को सूचित किया जाता है कि उपरोक्त नामांकन हेतु अपनी आवेदन/अनुरोध पत्र अधिकतम 19 सितम्बर 2025 तक प्रस्तुत करें, ताकि नामांकन परिषद को आगे की कार्रवाई हेतु प्रेषित किया जा सके। All Interested Scientists & Technical Officers of the Institute & Centre are hereby informed to submit their applications/request for the above nomination latest by **19th September 2025** in order to forward the nomination to the Council for further action.

(राहुल वाधवानी)/(Rahul Wadhwani)
वरिष्ठ प्रशासनिक अधिकारी /Sr. Administrative Officer

प्रति/To: सूचना-पट/ Notice Board

प्रतिलिपि / Copy to:

1. प्रभारी अधिकारी, आरओएचसी(एस), बंगलुरु – कृपया प्रसारित करें। OIC, ROHC(S), Bangalore- for circulation pls.
2. डॉ. एल. के. शर्मा – उक्त परिपत्र को वेबसाइट पर अपलोड करने हेतु अनुरोध किया जाता है।/ Dr. L K Sharma – with a request to upload the said circular on the website pls.

भाकृअनुप - राष्ट्रीय कृषि अनुसंधान प्रबंध अकादमी
राजेन्द्रनगर, हैदराबाद-५०००३०, तेलंगाणा, भारत
ICAR-National Academy of Agricultural Research Management
(ISO 9001:2015 Certified)
Rajendranagar, Hyderabad-500030, Telangana, India
Phones: (040) 2458 1322; Fax: (040) 2401 5912; https://naarm.org.in

डॉ गोपाल लाल.
कार्यकारी निदेशक
Dr. Gopal Lal
Acting Director

D.O.No.TRG/BIO-MOOC/ICM/NAARM/2025
September 02, 2025

Dear Sir/Madam,

Sub: Nominations for MOOC on "Introduction to Bioinformatics" from October 01st – November 30th , 2025-reg

Greetings from ICAR-NAARM!

We are pleased to inform you that ICAR–National Academy of Agricultural Research Management, Hyderabad, is offering a MOOC on "Introduction to Bioinformatics" from October 01 – November 30, 2025. This MOOC is designed to provide a solid foundation in Bioinformatics. The course covers key areas including: Basics of Bioinformatics and Molecular Biology, Biological Databases and their applications, Sequence Alignment, Algorithms, and Phylogenetic Analysis and Protein Structure Prediction and Validation.

I request you to nominate suitable candidates to attend this programme. Eligible and interested applicants are advised to fill the nomination form using the link https://naarm.org.in/bio_mooc/ on or before September 25, 2025.

For further information, contact the Programme Directors, Dr M Balakrishnan, Principal Scientist and Dr P Supriya, Scientist, ICM Division, (mail: balakrishnan@naarm.org.in/ supriya@naarm.org.in phone: 9908933588/9968171722) may be contacted for further query/Information.

A copy of the brochure is attached herewith.

With warm regards,

Yours sincerely,

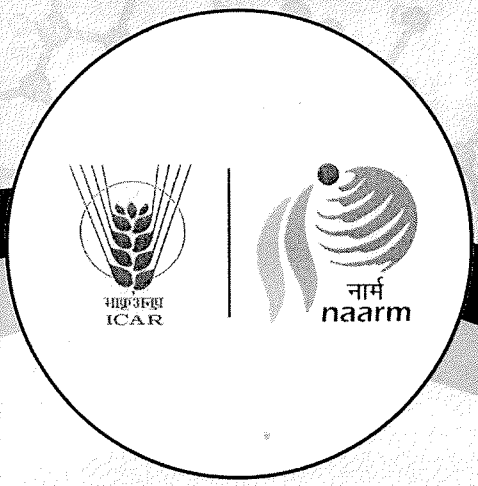
(Gopal Lal)

Encl.: As above.

ADMISSION OPENS

MOOC on

INTRODUCTION TO BIOINFORMATICS



Background of the Program

Bioinformatics is an interdisciplinary scientific field at the nexus of Biology, Computer Science, Statistics, and Information Technology, dedicated to the acquisition, storage, analysis, and interpretation of complex biological data. The advent of high-throughput technologies—such as Next-Generation Sequencing (NGS), Genome-Wide Association Studies (GWAS), Pan-genomics, and RNA-Seq—has transformed Bioinformatics into an indispensable discipline for managing and deciphering large-scale genomics and proteomics datasets. With its ability to integrate computational methodologies and biological insights, Bioinformatics plays a pivotal role in addressing emerging scientific challenges across domains such as Translational Research, Structural Biology, Drug Discovery, Bioengineering, and Biomedical Sciences. The student-friendly MOOC on Introduction to Bioinformatics offers a flexible and accessible platform to gain both theoretical knowledge and practical skills in Bioinformatics. Join us to explore how data and biology come together to solve real-world challenges in life sciences.

ICAR-National Academy of Agricultural Research Management Rajendranagar, Hyderabad-500030, Telangana, India
http://www.naarm.org.in

This MOOC course is designed to be valuable for aspiring PG/PhD students and others interested in the field of Bioinformatics, especially those seeking to deepen their understanding in this area.

Objectives

- To introduce and understand the basics of Bioinformatics, along with the functions of molecular biology, protein biology, and genomics.
- To familiarize students with essential biological databases, their organization, and tools for effective data retrieval.
- To understand the principles of sequence alignment, scoring systems, analysis using algorithms, and phylogenetic tree construction through computational tools.
- To gain knowledge of protein structure and computational approaches for structure prediction, modeling, and validation.

Highlights

- A steady foundation in bioinformatics and molecular biology.
- Mastering accessing and utilizing significant biological databases and tools.
- Knowledge in practical skills on sequence alignment and key algorithms.
- Learning about protein structure prediction and validation techniques.

The MOOC course is structured in to four comprehensive units

- **Unit I - Introduction to Bioinformatics and Molecular Biology**
  Bioinformatics basics, scope and importance of bioinformatics; Introduction to Molecular Biology; central Dogma of molecular Biology; Introduction to the basic principles and structure of biological Macromolecules (nucleic acids, proteins, carbohydrates, lipids); Genes and Genomes; Structure function relationships and analysis.

- **Unit II – Biological Databases**
  Introduction to biological databases, Nucleic acid sequence databases: Genbank/EMBL/DDBJ, Database search engines: Entrez, SRS; Protein databases: PIR, PDB, SWISSPROT, SCOP and CATH.

- **Unit III – Sequence Alignment and phylogenetic Analysis**
  Overview/Concepts in Sequence alignment, Scoring matrices for Nucleic acids and proteins: PAM, BLOSUM; Pairwise sequence alignment algorithms: Needleman & Wunsch, Smith & Waterman; Tools for Sequence alignment- BLAST and its variants; Multiple sequence alignment: CLUSTALW, PRAS. Phylogenetic analysis – MEGA, Phylip.

- **Unit IV – Protein Structure prediction and validation**
  Introduction to protein structure: Primary, secondary, tertiary structure; Prediction of secondary structures of proteins: Methods and tools; Protein tertiary structure prediction: homology modelling, SWISSMODEL, SWISS-PDB Viewer; Structure validation and refinement: Ramachandran plot.

Methodology

The course comprises a diverse blend of videos, assignments, activities and quizzes. Participants are expected to engage with the course materials – including videos, PowerPoint presentations, and assignments which will be released periodically throughout the 8-week duration. Each video lecture, lasting between 10 to 15 minutes, will be followed by related assignments or activities that participants are required to complete within a designated timeframe.

Equivalence

The course will be covered in 8 weeks duration including assessment. It comprises minimum 40 hours of learning through e-content, reading reference materials, discussion and assignments, which is more than or equivalent to 3 credit hours (as per UGC Instruction manual for MOOC development and delivery).

The content of the course may be considered equivalent to a refresher course as it engages participants for more than 40 hours of instructional materials (including reading, videos, assignments/ activities, discussion/ question-answer etc.) (as per UGC DO Letter No. F.2- 16/2002(PS) Pt.f.II dated December 3, 2018 for professional development of in-service using MOOCs platform).

Eligibility

PG/PhD Students and others (faculty, scientist etc) interested in basics of Bioinformatics preferably with knowledge in basics of biology and computers

Application details

Apply online ONLY using the following link (https://naarm.org.in/bio_mooc/) and required to pay INR 300 for application fee which is non-transferable and non-refundable. Application will remain open until 25th September 2025.

Fee Details

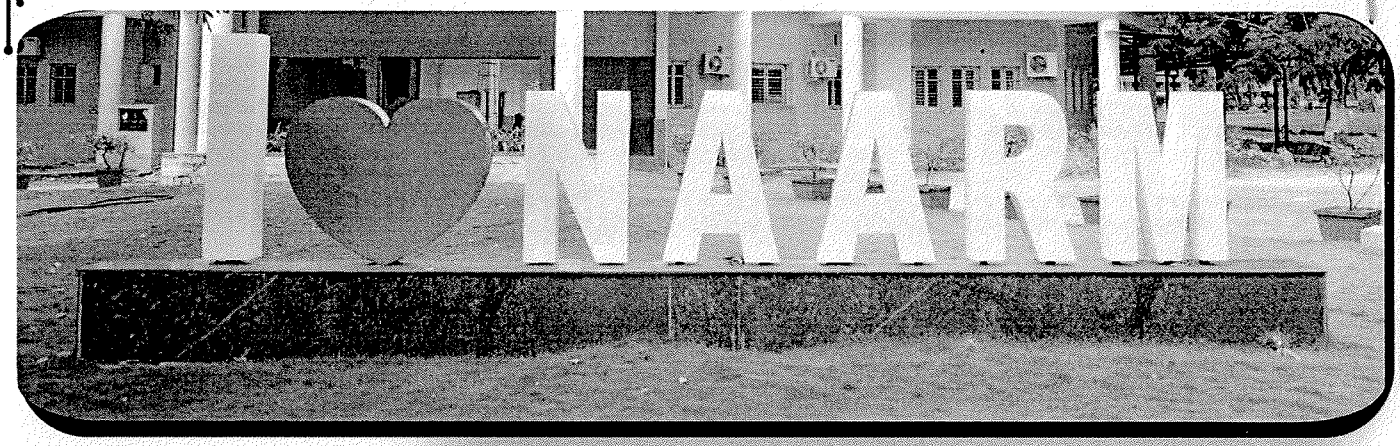
The course is accessible with a program registration fee of INR 300 and participation in the course. However, ONLY those successful participants as declared after evaluating all the criteria and desirous of having a certification can download their certificate on payment of INR 1,500/- per person (including GST).

Important Dates

Last date to apply : 25th September 2025
Commencement of Course : 01st October 2025
Course Completion : 30th November 2025

Duration: (01st October 2025 to 30th November 2025)

Payment of fee:
Name of the Beneficiary: ICAR Unit-NAARM
Account Number: 39104423023
Name of the Bank: IFSC: State Bank of India
SBIN0061700



About ICAR-NAARM

The ICAR-National Academy of Agricultural Research Management (NAARM) was established by the Indian Council of Agricultural Research in 1976 at Hyderabad. The major mandate of the Academy is to build capacity in agricultural research, education and extension education systems, and provide policy advocacy for the National Agricultural Research and Education System (NARES). To fulfil these mandates, Academy organises various capacity building programs for researchers, academicians, extension personnel, scholars, and other stakeholders in NARES. The Academy strives to enhance individual and institutional capacity for innovation in NARES. Considering the strategic importance of agricultural research in food security and economic growth of the country, leadership, governance and innovation are emerging as prerequisite for the transformation of NARES into a more pluralistic innovation system.

Centre for Lifelong Learning in Agricultural Education (COLLAgE)

It is functioning under the Education System Management Division of ICAR-NAARM. It is providing a platform to conduct various MOOCs, Online Distance education programs, Innovative educational Technology and educational consultancy programs across the country. It plays very important role in development of various online multimedia modules for the comprehensive MOOCs on Bioinformatics.

Course Directors

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