

INNOVATIVE STUDENT SUPPORT PROGRAMMES

1. INTERNATIONAL STUDENT TRAINING AND EXCHANGE PROGRAMME

Department of Biology, Indiana University of Pennsylvania, USA and Department of Biosciences, Union Christian College, Aluva has entered into a Memorandum of Understanding for academic collaboration and student exchange program between the two institutes during March 2021. This MOU will be in force from 2021 -22 academic year onwards.

The MoU aims to promote excellence and impart knowledge and skills in the broad areas of Microbiology and Biotechnology, between the two institutions. As per the MoU, up to 30 students and 2 faculty can visit IUP, Pennsylvania, USA for 5 weeks for training and about 10 – 15 students from USA can visit Union Christian College. Students from the Biosciences Department of UCC will be entitled to pursue advanced hands-on training in various disciplines of Microbiology and Biotechnology, especially in Genomics and Proteomics at IUP Campus, USA every year. Interested students can also pursue their masters / doctoral program at IUP, subject to the conditions laid down in the MoU.

Various programs including conduct of certificate courses, hands on training, seminars, student exchange programs were envisaged as part of this MoU. The Certificate program on Gene Editing Tools in Medicine & Biotechnology is the second program conducted as part of this MoU/tie-up. Subjects covered under this program includes classroom lectures on types of gene editing tools, principles of CRISPR-Cas9 gene editing and its application in agriculture, vector-borne diseases, viruses, drug therapeutics, drug development, and cancer immunotherapy. Due to the prevalent Covid conditions, the classes were taken in online mode by Dr. N. Bharathan, Chair, Biology, College of Natural Sciences & Mathematics, IUP, USA from October 23 to Dec 19, 2022. Examinations were conducted as part of the course and certificates were issued to the successful participants. This online training will help students to acquire latest knowledge in the particular subject which in turn will help them to compete with students of other countries while applying for job in India or abroad.

As mentioned earlier, this MoU/tie-up will help the students of our college to acquire knowledge about the latest developments in the field of science especially in the broad areas of biotechnology and microbiology and an international exposure and understanding about the broad subjects, while undergoing training at Pennsylvania campus of IUP. It will give them ample exposure and understanding of the subjects, which in turn help them in boosting their confidence for obtaining admission in world renowned institutions for their higher studies or for applying jobs. The MoU also gave the chance to the students of our college to pursue their doctoral/higher studies at Indiana University of Pennsylvania, USA.

The Department of Biosciences, Union Christian College, Aluva is offering an Online Certificate Course in Gene Editing Tools in Medicine & Biotechnology in association with Department of Biology, Indiana University of Pennsylvania, PA, USA.

Course Description

As advances in biotechnology and gene editing gain momentum, so do our understanding of the principles and techniques governing the gene editing tools. The course will describe in detail the development and application of several gene editing technology like CRISPR in agriculture, animal sciences, human health, and environment. A wide variety of applications of editing process including basic biological research, development of biotechnology products, and treatment of diseases will be discussed. The course will also address issues concerning their ethical, legal, and social implications in the United States and around the world.

Student Learning Outcomes:

1. Understand the fundamental properties of different types of genome editing methods and their molecular mechanisms.
2. Understand the basic mechanisms of genome editing tools like restriction enzyme digestion, Zinc finger nucleases, TALENs gene editing, and CRISPR-Cas9 Gene editing.
3. Apply basic genome concepts to the understanding of how do gene editing works?
4. Utilize basic mechanisms of CRISPR-Cas9 in genome engineering of prokaryotes, plants, animals, and humans and the role it plays to study genes, cellular function, disease progression & therapeutic applications.

FACULTY INSTRUCTOR:

N. Bharathan, PhD, Professor & Chair, Biology, Indiana University of Pennsylvania, Indiana, PA 15705, USA.



Online Certificate Course on Gene Editing Tools in Medicine & Biotechnology



COURSE CO-ORDINATOR

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PROGRAMME ADVISOR

Dr. Susan Eapen
Adjunct Professor, Dept. of Biosciences, Union Christian College, Aluva - 683102, Kerala, INDIA.

Union Christian College, Aluva

THE TRUTH SHALL MAKE YOU FREE



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IUP Indiana University of Pennsylvania

23rd OCT - 19th Dec 2021

Online Certificate Course on Gene Editing Tools in Medicine & Biotechnology

Teaching Model

Student learning through discussion forums, assignments, and Zoom delivery. Participation in class is necessary regardless of where and how students attend. Online is not meant to be a diminished experience but an alternative. Class sessions are not meant to be passive observations of a class video stream, but rather to have fully interactive engagements, including Q&A, group work (if possible) and student presentations.

Evaluation

1. Written Assignment 1—10%
2. Written Assignment 2—10%
3. Three Short Exams—30%
4. Discussion Forums—20%
5. Final Exams -30%

Evaluation Methods and Grading Policy:

A student's final grade reflects performance in the lecture exams; class participation/and critique of written assignments. Your grade in the course will be composed of i) 60% examinations - Exams will be Multiple choices and short answer essays. All will have to take Final Exam to get Final Grade. ii) 20% Written Assignments and Discussion Forums (20%) - Students will have to select TOPICS for Written Assignment 1 & Written Assignment 2. Total assignment will be worth 20% of the final grade.

All will have to submit assignments and participate in Discussion Forums to get a FINAL Grade. Course Grades; Grading will be based on a straight percentage scale.

A= 90%-100%, B= 80%-89%, C= 70%-79%, D= 60%-69% and F= Less than 59.1%

After successful completion of the course, Students will be awarded a Certificate jointly signed by Faculty Instructor from Indiana University of Pennsylvania (IUP) USA and Union Christian College, Aluva, Kerala. The Certificate will be sent to your door step by India Post/Courier

Course Modules

Introduction: What is Genome Editing?

Module 1

Structure and organization of DNA in prokaryotic and eukaryotic cells, Chromatin structure; Gene structure and function.

Module 2

Discovery and basic principles of gene editing, How does gene editing tool work?

Types of Gene Editing tools:

Restriction Enzymes, Zinc Finger Nucleases, Talen Gene Editing, CRISPR-Cas9 Gene Editing.

Module 3: Application and operation of CRISPR/Cas9 system as a genome editing tool:

CRISPR Application in Agriculture: To enhance Traditional Breeding Techniques in Non-Traditional Ways.

CRISPR Application in Humans: Advances in therapeutic application of CRISPR-cas9, CRISPR application immune drug development, CRISPR babies.

Module 4: CRISPR/Cas9 in Disease Models

Pulmonary and gastrointestinal diseases, Hematologic diseases including sickle-cell diseases, Viral cause of diseases (HIV and Human papilloma virus), Vector borne diseases (malaria); Gene Drive: Cancer and cancer drug development using CRISPR

Module 5: Unusual Applications of CRISPR i) pet breeding, ii) allergy free foods, decaf coffee beans, nutritious fish, iii) greener fuels, iv) eradicating pests, v) faster racehorses, vi) de-extinction, vi) ecosystem protection

Module 6: CRISPR Ethics: Moral Considerations for Applications of CRISPR

- i) Ethical challenges created by CRISPR, ii) Biological consequences of gene editing a gene in germ line/and somatic cells, iii) In translational and clinical medicine, iv) Fertility applications, v) Regulation for clinical research involving human subjects, vi) Establish framework in some countries to manage research risks, vii) Ecosystem alteration to protect endangered species, viii) Prevention against misuses of technology, ix) Justice in CRISPR/cas9 research and clinical applications

In addition, we will use news articles on CRISPR technology topics from current media and publications for discussion.

Course Details

Credits—3

Eligibility - B.Sc., M.Sc., Ph.D (Biological Sciences)

(Open for Students & Faculty from Institutes in India only) Course commencement - 23rd October 2021

Days - Saturdays and Sundays (7.00 pm to 8.30 pm)

Mode - Online

Mode of Selection - Based on Merit /Research Interest

Total number of Seats - 40

(30 for UC College and balance to others)

(Last Date of Registration: 20th Sept. 2021)

INTERNATIONAL COURSE ERA ONLINE COURSES

Union Christian College is a platform for Course Era international online courses. Every year students and faculty avail various short-term online courses in various subjects and disciplines with various international Universities under the aegis of Course Era International.

II) PLACEMENT AND GUIDANCE CELL

Placement and Guidance Cell implement several innovative methods to help students in progression to higher education, in placements and also in helping them with enhancement of soft skills, life skills, communication skills, interview methods, group discussion and resume writing, exposure to various opportunities of job and higher education etc. etc.

a) **Induction & Orientation:**

On the basis of economic changes, placement criteria will always have changes which will affect each year pass out batch. UCC placement cell will include the updated session on the new batch Induction & Orientation, so that the changes will be made aware to the current batch of students as well, which helps the students to take the steps to build their career from the first year onwards.

b) **Registration Process for all students:** All the students of the college have the privilege to Register in UCC placement cell. Through the registration process the placement cell is collecting the primary details of the particular student including his/her resume. Resumes will be verified and errors will be informed to the particular student. Registered students will be given the UCC placement Id & UCC placement application credent, which help the students to conduct the MOCK test & refer the study materials.

c) **National & International Webinars & seminars:** National & International Webinars (by considering the COVID situations) are conducted online for the soft skills as well as technical topics. Before the COVID crisis, soft skill and hard skill training has been conducted every Saturdays 10:00 am to 12:00 & 2:00pm to 4:00pm as different batches

d) **Internships.:** Internships of 45 days to 3 months are allocated to the interested & eligible students for the practical experience of each and separate roles.

e) **MNC's Mock Aptitude Test.:** UCC placement has been introduced a new platform for the registered students 'with the credentials where they can attend different types of Mock test after go through the study materials of different topics in aptitude syllabus. Mock test has been classified by the syllabus topic as well as the MNC's organization patterns

f) **Mock Interviews:** Mock interviews are conducting for the selected students with the help of different MNC's organization HR We have a great support from HR in Deloitte, WIPRO, TCS & KPMG.

- g) **Students' Progress Tacking Evaluation:** The new platform which introduced by the UCC placement will save the activity progress of each student in their own profile and it will be monitored by the admin. If a student has not login the platform for last 15 days, the students will get the notification.
- h) **Quarterly Survey:** Every quarter interval of time UCC placement sent a google survey form to the students which helps
1. To maintain a good relation with the students.
 2. To understand the current situation of the students (like doing any internship, part time job, working etc.).
 3. To understand the requirement of students.
 4. To evaluate the UCC placement performance.
 5. To answer the students' quires, suggestion etc.
 6. Data to be a part of UCC placement yearly report.
- i) **Encourage competitive events.**
 UCC placement always encourage the students to be a part of competitive events like Hackathon, college fest etc.
 Every year UCC placement cell helping students to be a part of TCS NQT exam.
- j) **Scroll of Honour:** Every year, we honour the best participant student in UG & PG, which motivate the students to be a part of UCC placement activities.
- k) **WhatsApp group.:** Different WhatsApp group has been created based on batches & courses, so that the communications has been done easily.
- l) **Mail notification.:** Mail Notification of the below categories will be sent to the registered email id of students.
- New Job openings.
 - Application form of the new openings with the eligible criteria.
 - Updates on the submitted applications
 - Errors in the submitted applications, Resumes etc.
 - Schedule & Result of aptitude test & interview.
 - Renewal of UCC placement id & credentials.
- m) **Report:** Monthly reports are sending to the management; yearly report will be submitted by every June to the authority for the verification and approval.
- n) **Add on certifications:** UCC placement cell is promoting the Primary certifications in Excel, Word, PPT, DBMS, communication skill, software testing, digital marketing, CRM etc. which help the students through different platforms searching for suitable career opportunities.
- o) **Feedback:** Feedback has an important role in every performance. UCC placement always collect the feedback after every session from the students as well as the organisers. After every recruitment process, we are collecting the feedback of each student's performance from the organization so that we can find the RCA of the failure & success, which make a support on the improvement.



III) IEDC cell of the college and Department of Electronics & Computer Maintenance provides training in Entrepreneurial skills.

Dept of Electronics & Computer Maintenance is conducting on the job training for second year students to develop the entrepreneur skills. They encourage students to attend workshops and seminars conducted by IEDC and Start Up Mission. Every year at the end of the academic programme they conduct project workshops to show case their project works. Mini start up project competitions are also held to enflame the spirit of entrepreneurship and help students to be equipped in entrepreneurial skills.



UNION CHRISTIAN COLLEGE, ALUVA, KERALA
(Re-accredited with 'A' Grade By NAAC)
DEPARTMENT OF ELECTRONICS AND COMPUTER MAINTENANCE

IDEATE^{2K20}

10th MARCH 2020
INTER COLLEGIATE PROJECT COMPETITION & EXPO

FIRST PRIZE : 1.5 K
SECOND PRIZE : 1 K

REPORTING TIME : 9.30 am
Venue : CP Mathew Memorial Block

For Further Details
Mr.Akhil TV (HOD) : 9349405871
Mr.Ajan P J : 9441814732
Mr.Lijo Thomas : 9745694864

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https://www.youtube.com/channel/UChWwUr0IcgHImpEI_lif9PA

https://www.instagram.com/invites/contact/?i=xcavvjpf3h6y&utm_content=i8jbp62

IV) CAPACITY BUILDING PROGRAMMES IN 5.1.3

Many student supportive programmes are described in detail in excel 5.1.3 and word file 5.1.3 as Capacity Building Programmes with supporting documents.

The soft skills provided, the language enhancement programmes, the life skill training especially counselling, and ICT skill development and training programmes conducted in the college with supporting programmes are furnished.