

Requesting the approval of the revised M.Sc Botany syllabus of CUK plant Science-reg.

7 messages

Arun Kumar K Faculty Plant Science <arunkumark@cukerala.ac.in>

Thu, Feb 18, 2021 at 1:07 PM

To: profkrchandrashekar@gmail.com

Cc: Parimelazhagan Thangaraj <drparimel@gmail.com>, Janardhana GR <grjbelur@gmail.com>, Sivaram V <sivaram900@gmail.com>, "Dr Dennis Thuruthiyil T." <den_thuruthiyil@cukerala.ac.in>, Ramachandran Kotharambath <ram@cukerala.ac.in>, Ginny Antony <ginnyantony@cukerala.ac.in>

Dear Sir/Madam

Greetings from Dept of Plant science, Central University of Kerala.

I am thankful to all the members for your continuous support and contribution for the successful conduct of BOS meeting held online on **12th Feb 2021**.

Here I attached the M.Sc Botany revised syllabus by incorporating the suggestions of the experts in the following points.

1) Revision carried out by incorporating the Programme objectives and outcome and all courses objectives and outcome.

2) Revision carried out by incorporating a list of practicals for newly introduced two skill based elective courses listed at the end as

- i. BTY 5007 Hands on training on Plant metabolites and Drug discovery
- ii. BTY 5008 Organic Farming

3) List of suggested 14 MOOCs for choice for elective courses

As our Academic council meeting is scheduled on 23-02-2021, I request all the experts to approve the attached syllabus through by mail on or before 21-02-2021.

Thanks once again.

Regards

Dr.K.Arunkumar, Ph.D

Professor & Head

Department of Plant Science

School of Biological Sciences

Central University of Kerala

Periye-671 320

Kasaragod,Kerala, India

Mobile: 91-9865051016

http://www.cukerala.ac.in/index.php?option=com_content&view=article&id=601&Itemid=410&lang=en

2 attachments



MOOC list .docx

18K



Syllabus M.Sc PLS -2020-21-GA.docx

222K

Ramachandran Kotharambath <ram@cukerala.ac.in>

Thu, Feb 18, 2021 at 1:24 PM

To: Arun Kumar K Faculty Plant Science <arunkumark@cukerala.ac.in>

Cc: profkrchandrashekar@gmail.com, Parimelazhagan Thangaraj <drparimel@gmail.com>, Janardhana GR <grjbelur@gmail.com>, Sivaram V <sivaram900@gmail.com>, "Dr Dennis Thuruthiyil T." <den_thuruthiyil@cukerala.ac.in>, Ginny Antony <ginnyantony@cukerala.ac.in>

Dear Sir

I approve the syllabus.

Sincerely
Ram

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Ramachandran Kotharambath | Assistant Professor | Department of Animal Science | Central University of Kerala | Tejaswini Hills, Periya | Kasaragod, Kerala | India

Sivaram V <sivaram900@gmail.com>

Thu, Feb 18, 2021 at 1:31 PM

To: Arun Kumar K Faculty Plant Science <arunkumark@cukerala.ac.in>

Cc: profkrchandrashekar@gmail.com, Parimelazhagan Thangaraj <drparimel@gmail.com>, Janardhana GR <grjbelur@gmail.com>, "Dr Dennis Thuruthiyil T." <den_thuruthiyil@cukerala.ac.in>, Ramachandran Kotharambath <ram@cukerala.ac.in>, Ginny Antony <ginnyantony@cukerala.ac.in>

Dear Dr Arun Kumar

I am herewith accepting the M Sc Botany Syllabus of CKU.

regards,

Sivaram

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Chandrashekar K R <profkrchandrashekar@gmail.com>

Thu, Feb 18, 2021 at 2:00 PM

To: Arun Kumar K Faculty Plant Science <arunkumark@cukerala.ac.in>

Dear Dr Arun Kumar,

The M. Sc. Syllabus of Plant Science of CUK is here by approved.

Chandrashekar K R

On Thu, 18 Feb 2021, 12:54 pm Arun Kumar K Faculty Plant Science, <arunkumark@cukerala.ac.in> wrote:

[Quoted text hidden]

Ginny Antony <ginnyantony@cukerala.ac.in>

Fri, Feb 19, 2021 at 3:57 AM

To: Sivaram V <sivaram900@gmail.com>

Cc: Arun Kumar K Faculty Plant Science <arunkumark@cukerala.ac.in>, profkrchandrashekar@gmail.com, Parimelazhagan Thangaraj <drparimel@gmail.com>, Janardhana GR <grjbelur@gmail.com>, "Dr Dennis Thuruthiyil T." <den_thuruthiyil@cukerala.ac.in>, Ramachandran Kotharambath <ram@cukerala.ac.in>

Syllabus approved. Thank You for the efforts from all.

[Quoted text hidden]

Dr Dennis Thuruthiyil T. <den_thuruthiyil@cukerala.ac.in>

Thu, Feb 18, 2021 at 3:34 PM

To: Arun Kumar K Faculty Plant Science <arunkumark@cukerala.ac.in>

Syllabus approved.

Dennis

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Parimelazhagan Thangaraj <drparimel@gmail.com>

Thu, Feb 18, 2021 at 4:22 PM

To: Ginny Antony <ginnyantony@cukerala.ac.in>

Cc: Sivaram V <sivaram900@gmail.com>, Arun Kumar K Faculty Plant Science <arunkumark@cukerala.ac.in>, profkrchandrashekar@gmail.com, Janardhana GR <grjbelur@gmail.com>, "Dr Dennis Thuruthiyil T." <den_thuruthiyil@cukerala.ac.in>, Ramachandran Kotharambath <ram@cukerala.ac.in>

Dear Prof,

I am accepting and approving the syllabus.

Thank you

Parimel.

On Thu, Feb 18, 2021 at 3:27 PM Ginny Antony <ginnyantony@cukerala.ac.in> wrote:

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Dr. Parimelazhagan Thangaraj, Ph.D.

Professor

Department of Botany

Bharathiar University

Coimbatore - 641046

Mobile: 8903001973

E-mail: drparimel@gmail.com; drparimel@buc.edu.in



பாரதியார் பல்கலைக்கழகம்
Bharathiar University

Re-accredited at the "A" Grade Level by NAAC
Coimbatore, Tamilnadu, INDIA.

BTY 5208	PLANT BIOTECHNOLOGY AND PLANT GENETIC ENGINEERING (Credits4;Theory4hrs;Practical3 hrs)
Aim	Students are expected to gain skill in techniques of recombinant DNA (rDNA) technology and plant genetic engineering and, their application in plant biotechnology
Objectives	<ul style="list-style-type: none"> • To Study about various vectors and DNA modifying enzymes used in rDNA technology • To understand the methods and applications of plant biotechnology • To study the biosafety methods, laws, ethical issues of rDNA technology and IPR
Learning outcome	<p>After the completion of this course,the learner will know</p> <ul style="list-style-type: none"> ➤ How to utilize plants for biotechnology application ➤ Underst and the principles of rDNA technology and how it can be used in plants to generate better traits ➤ Understand biosafety, legal and ethical issues of genetic engineering in plants.
S.No.	Theory
1.	Vectorsinmolecularchloning: Plasmids, phages, phagemids, hybrid vectors, cosmids, eukaryotic virus-basedvectors,shuttlevectors,expressionvectors(especiallyplant expressionvectors),fosmids,PACs, BACsandYACs.
2.	Molecularchloning: Steps - amplification, restriction digestion, ligation, transformation,screening. Special molecules and enzymes for DNA modifications - restrictionenzymes, ligases, klenow, phosphatases, recombinases, modification ofDNAfragmentsusinglinkers,adaptorsandhomopolymer tailing. Recombinationbasedcloning.
3.	Introducinggenesintoprokaryotes: Transformation,transduction,conjugation,electroporation.
4.	Identifyingtherightclone: Screeningandselection-reportergenes,selectablemarkers,insertional

	inactivation of marker genes. Molecular screening - PCR, colony and dot-blot hybridization, nucleic acid hybridization and immunological techniques.
5.	Applications of rDNA technology in biotechnology: Genomic and cDNA libraries, isolation of important genes, Construction of gene cassette, protein engineering, bioprocessing, phytoremediation, agriculture.
6.	Gene transfer to plants: Tissue culture in plant genetic engineering Integrative DNA transfer-direct transformation methods, <i>Agrobacterium</i> -based methods, Organelle engineering. Non-integrative DNA transfer - Plant viruses and Protoplast fusion. Molecular and functional analysis of transgenic plants.
7.	Biotechnological applications of plant genetic engineering: Functional genomics, resistance to abiotic and biotic stresses, crop quality improvement, nutrient enhancement, nitrogen fixation, nutrition up-take, production of male sterile lines, plant antibodies, vaccines, commercial oils, plant secondary products, biofuel, bioplastics and plants as bioreactors.
8.	Hazards and impact of GMOs: Biosafety considerations, Biosafety regulations in India. Ethical issues, biological risks, impact on biodiversity, controlled trials. Economic issues, legal issues, intellectual property rights (IPR) in relation to plant biotechnology.
S. No.	Laboratory/Practical
1.	Plasmid restriction digestion and gel electrophoresis to study DNA mobility, stoichiometry, deciding factors for percentage of agarose/polyacrylamide, importance of DNA marker, band size calculation, etc.
2.	Isolation of vector plasmid and, plasmid with insert/ or PCR product, for cloning
3.	Preparation of vector and insert by restriction digestion and elution, for cloning
4.	Ligation for cloning
5.	Preparation of competent cells and transformation
6.	Working out problems on how to calculate restriction-digested band size and construction of to-the-scale plasmid map
7.	<i>Agrobacterium</i> -mediated plant transformation – preincubation
8.	<i>Agrobacterium</i> -mediated plant transformation – infection
9.	<i>Agrobacterium</i> -mediated plant transformation – selection
10.	GUS or GFP detection
11.	Gene amplification using PCR and its confirmation using gel electrophoresis
12.	Southern blotting and transfer

Text Books:

1. Primrose SB, Twyman R. 2016. Principles of Gene Manipulation and Genomics, 8th edition. Wiley-Blackwell.
2. Brown TA. 2016. Gene Cloning and DNA Analysis: An Introduction, 7th edition. Wiley-Blackwell.
3. Cooper G. 2018. The Cell: A Molecular Approach, 8th edition. Sinauer Associates.
4. Glick BR, Patten CL. 2017. Molecular Biotechnology: Principles and Applications of Recombinant DNA, 5th edition. ASM Press.
5. Bourgaize D, Jewell TR, Buiser RG. 1999. Biotechnology: Demystifying the Concepts, 1st edition. Benjamin

nCummings.

6. Nichol DST. 2008. An Introduction to Genetic Engineering, 3rd edition. Cambridge University Press.
7. Gelvin SB, Schilperoort RA. (Eds.). 2000. Plant Molecular Biology Manual. Springer.
8. Clark, Melody S. (Eds.). 1997. Plant Molecular Biology—A Laboratory Manual. Springer.
9. Dale JW, Schantz MV, Plant N. 2011. From Genes to Genomes: Concepts and Applications of DNA Technology, 3rd edition. Wiley.
10. Shah JM. 2012. Strategies to overcome fungal diseases in plants: An enchyridion. Lambert Academic Publishing AG & Co.
11. Kshitij Kumar Singh. 2015. Biotechnology and Intellectual Property Rights: Legal and Social Implications. Springer.
12. Erbis FH, Marek K (Eds.). 2003. Intellectual Property Rights in Agricultural Biotechnology, 2nd edition. CABI Publishing.
13. Parashar S, Goel D. 2013. IPR, Biosafety and Bioethics. Pearson India.