

From

Chennai

The Head

06-09-2018

Faculty of Bio-Engineering

BIHER

To

The Dean

BIHER

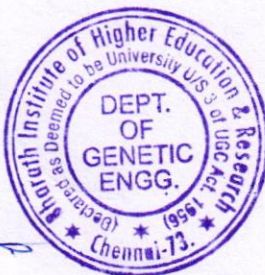
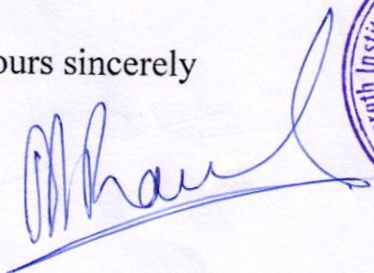
Respected Sir

Sub: approval to start a value added course on "Microbial Inoculant Production Technology" -reg

It has been planned by the Faculty of BioEngineering to start a Value Added Course on "Microbial Inoculant Production Technology" for the benefit of B-Tech, Genetic Engineering, Industrial Biotechnology and Biomedical Engineering students from 4<sup>th</sup> October, 2018. The duration of the course is 30 hrs comprising of both theory and practical classes. I request you to kindly approve of the same.

Thanking you

Yours sincerely







# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

Date: 06.09.2018


**SCHOOL OF BIOENGINEERING**

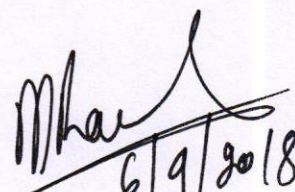
## CIRCULAR

### Notification for Value added courses offered by the School of Bioengineering

The Department of Genetic Engineering, School of Bioengineering, is scheduled to offer a Value added Course on “**Microbial Inoculant Production Technology**” from 04/10/2018 for a period of 3 weeks. Interested students can approach Mr.A.Manikandan, Assistant Professor and Course Coordinator, Department of Genetic Engineering for registration and for further details on or before 1<sup>st</sup> October 2018.

**Eligibility-II, III and IV B-Tech IBT, GE and BME**

  
Course Coordinator

  
6/9/2018  
HOD

**Dr. P.B. RAMESH BABU, Ph.D.,**

Professor and Head  
Department of Genetic Engineering  
**BHARATH INSTITUTE OF HIGHER EDUCATION & RESEARCH**  
(Declared as Deemed to be University U/S 3 of UGC Act. 1956)  
Chennai 600073 Tamil Nadu India

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Deans

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Heads of Departments



**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH**  
**SCHOOL OF BIO-ENGINEERING**  
**DEPARTMENT OF GENETIC ENGINEERING**  
**VALUE ADDED COURSE ON MICROBIAL INOCULANT PRODUCTION TECHNOLOGY**  
**2018-2019**  
**COURSE CO-ORDINATOR DETAILS**

**Faculty Name:** Mr.A.Manikandan, Assistant Professor, Department of Genetic Engineering.

**Email ID:** [manikandan.bi@bharathuniv.ac.in](mailto:manikandan.bi@bharathuniv.ac.in)

**Mobile number:** 78456 48898





**BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
SCHOOL OF BIO-ENGINEERING  
DEPARTMENT OF GENETIC ENGINEERING  
VALUE ADDED COURSE SYLLABUS  
2018-2019**

**Microbial Inoculant Production Technology**

**OBJECTIVES**

1. To make the students to understand concept and history of microbial inoculants
2. To study about the importance of bacterial Nitrogen fixers
3. To study about the Fungal Bioinoculants & 'P' Solubilizers and P-mobilizers.

**MODULE I: BACTERIAL BIOINOCULANTS**

History of Bioinoculants, concepts– types of bioinoculants – Bacterial, Fungal, Algal and Actinorhizal. Nitrogen fixation – Biological nitrogen fixation- Importance of biofertilizers. Bacterial Nitrogen fixers, Characteristics and classification of Rhizobium, Azospirillum.

**MODULE II: FUNGAL AND ALGAL BIOINOCULANTS**

Mycorrhizae and types- Mechanisms of 'P' mobilizers – AM Fungi characters- Algae and Azolla bioinoculants, Blue green algae and Azolla -types and their characters – N<sub>2</sub> fixation mechanisms- BGA Azolla symbiosis.

**MODULE III: ACTINORHIZOAL AND OTHER INOCULANTS**

Frankia-casuarina symbiosis- Frankia characters and their importance – Zn, K, and Si, solubilizer and their importance.

**Total Contact Hours: 30**

**TEXT BOOKS:**

- 1) Adhya, T.K., Lal, B., Mohapatra, B., Paul, D. and Das, S. Advances in Soil Microbiology; Recent Trends and Future Prospects. Springer Publi., UK.
- 2) Barabara. E., Schulz Christein J.C. Boyle Thomas N. Sieber (Eds.) 2006. Microbial Root Endophytes. Springer publications, Germany.

**REFERENCE BOOKS:**

- 1) Coyne, M.S. 2000. Soil Microbiology, CBS Publications, New Delhi.
- 2) Dixon, G.R., Tilston, Emma L.(Eds.) 2010 Soil Microbiology and Sustainable Crop Production, Springer publisher.
- 3) Eldor paul, 2015. Soil Microbiology, Ecology and Biochemistry, fourth edition, academic press, wyman St., Waltham.



**SCHOOL OF BIO-ENGINEERING**  
**DEPARTMENT OF GENETIC ENGINEERING**  
**VALUE ADDED COURSE**

**Microbial Inoculant Production Technology (2018-2019)**

Session	Topic	Date	Duration (Hr)	Resource person
Session I	History and types of Bioinoculants	5/10/2018	3	Dr.T.Jayalakshmi
Session II	Biological nitrogen fixation	5/10/2018	3	Mr.A.Manikandan
Session III	Characteristics and classification of Rhizobium, Azospirillum	6/10/2018	4	Dr.T.Jayalakshmi
Session IV	Mycorrhizae and types	6/10/2018	3	Dr.P.B.Ramesh babu
Session V	Blue green algae and Azolla	12/10/2018	3	Mr.A.Manikandan
Session VI	Mechanisms of 'P' mobilizers	13/10/2018	4	Dr.P.Rajasulochana
Session VII	N <sub>2</sub> fixation mechanisms	13/10/2018	3	Dr.P.B.Ramesh babu
Session VIII	Frankia characters and their importance	19/10/2018	3	Mr.A.Manikandan
Session IX	Zn, K, and Si, solubilizer and their importance.	20/10/2018	4	Mrs.K.Vijayalakshmi



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**VALUE ADDED COURSE TIMETABLE**

2018-2019

Days / Period	I 9.00 – 9.50	II 9.50 – 10.40	III 10.50 – 11.40	IV 11.40 – 12.30	12.30 – 1.30	V 1.30 – 2.10	VI 2.10 – 2.50	VII 2.50 – 3.30
MON					LUNCH BREAK			
TUE								
WED								
THU								
FRI						MIP		
SAT	MIP					MIP		

SUBJECT CODE	SUBJECT NAME	STAFF
Theory		
Value added course	Microbial Inoculant Production technology (MIP)	Mr.A.Manikandan
	Room No	SA 114



**BHARATH INSTITUTE OF HIGHER EDUCATION AND  
RESEARCH  
SCHOOL OF BIO-ENGINEERING  
DEPARTMENT OF GENETIC ENGINEERING  
VALUE ADDED COURSE  
MICROBIAL INOCULANT PRODUCTION  
TECHNOLOGY(2018-2019)  
Students Name List**

S.No	Reg No	Name
1	U16BR022	Upal joshi
2	U16BR023	Vinodh kannan k
3	U16BR028	Vishnu s
4	U16BR032	T Baba chandrika
5	U16BR033	Shali thasneem
6	U16BR034	Kayapoyollu neelima
7	U16BR048	Narappagari radhika
8	U16BR049	Asritha reddy
9	U16BR050	Keerthivasu r
10	U16BR060	Nagarjuna
11	U16BR061	Sharmila
12	U16BR066	B lakshmi reddy
13	U16BR067	Nikhil charan k
14	U16BR066	B lakshmi reddy
15	U16BR067	Nikhil charan k
16	U16BR072	D Yuvabharathi kannan
17	U16BR073	G Surya prakash
18	U16BT014	Puviyarasi S
19	U16BT015	Aswin M
20	U16BT017	Vedicherla Aswin Kumar
21	U16BT018	Penna Balakrishna
22	U16BT021	Deepika
23	U16BT022	Dara Vijay chandra Gangadhar Guptha
24	U16BT025	Ramavath Arun Naik
25	U16BT030	Manikandan.K
26	U16BT031	L. Rathna Kumar
27	U16BT501	Kaviya Lakshmi P
28	U16BM019	Ajeesh.P
29	U16BM021	Chryolyte precious rani.S
30	U16BM022	Sasikumar.J



31	U16BM023	Nawaz shariff.A
32	U16BM025	K.Achyuthareddy
33	U16BM028	Hariritusheshasainiharika
34	U16BM031	Tummasathvikphani rani teja
35	U16BM032	Kakanikarthik
36	U16BM034	Nehakumari
37	U16BM036	Tulabandulageethamadhuri



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**DEPARTMENT OF GENETIC ENGINEERING**  
**VALUE ADDED COURSE**  
**MICROBIAL INOCULANT PRODUCTION TECHNOLOGY(2018-2019)**  
**Attendance Report**

S.No	Reg No	Name	5/10/2018	6/10/2018	12/10/2018	13/10/2018	19/10/2018	20/10/2018
1	U16BR022	UPAL JOSHI	P	P	P	P	P	P
2	U16BR023	VINODH KANNA K	P	P	P	P	P	P
3	U16BR028	VISHNU S	P	P	P	P	P	P
4	U16BR032	T BABA CHANDRIKA	P	P	P	P	AB	P
5	U16BR033	SHALI THASNEEM	P	P	P	P	P	P
6	U16BR034	KAYAPOYOLLU NEELIMA	P	P	P	P	P	P
7	U16BR048	NARAPPAGARI RADHIKA	P	P	P	P	P	P
8	U16BR049	ASRITHA REDDY	P	P	P	P	P	P
9	U16BR050	KEERTHIVASU R	P	P	P	P	P	P
10	U16BR060	NAGARJUNA	P	P	P	P	P	P
11	U16BR061	SHARMILA	P	P	P	P	P	P
12	U16BR066	B LAKSHMI REDDY	P	P	P	P	P	P
13	U16BR067	NIKHIL CHARAN K	P	P	P	P	P	AB
14	U16BR066	B LAKSHMI REDDY	P	AB	AB	P	P	P
15	U16BR067	NIKHIL CHARAN K	P	P	P	P	P	P
16	U16BR072	D YUVABHARATHI KANNAN	AB	P	P	P	P	P
17	U16BR073	G SURYA PRAKASH	P	P	P	P	P	P
18	U16BT014	Puviyarasi S	P	P	P	P	P	P
19	U16BT015	Aswin M	P	P	P	P	P	P
20	U16BT017	Vedicherla Aswin Kumar	P	P	P	AB	P	P
21	U16BT018	Penna Balakrishna	P	P	P	P	P	P
22	U16BT021	Deepika	P	P	P	P	P	P
23	U16BT022	Dara Vijay chandra Gangadhar	AB	P	P	P	AB	P
24	U16BT025	Ramavath Arun Naik	P	P	P	AB	P	P
25	U16BT030	Manikandan.K	P	P	P	P	P	P
26	U16BT031	L. Rathna Kumar	P	P	P	P	P	P
27	U16BT501	Kaviya Lakshmi P	P	P	P	P	P	P
28	U16BM019	Ajeesh.P	P	P	P	P	P	AB
29	U16BM021	Chryolyte precious rani.S	P	P	P	P	P	P
30	U16BM022	Sasikumar.J	P	P	P	P	P	P
31	U16BM023	Nawaz shariff.A	P	AB	P	P	P	P
32	U16BM025	K.Achyuthareddy	P	P	P	P	AB	P
33	U16BM028	Hariritusheshasainiharika	P	P	P	P	P	P
34	U16BM031	Tummasathvikphani rani teja	P	P	P	P	P	P
35	U16BM032	Kakanikarthik	AB	P	P	AB	P	P
36	U16BM034	Nehakumari	P	P	P	P	P	P
37	U16BM036	Tulabandulageethamadhuri	P	P	P	P	P	P



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**DEPARTMENT OF GENETIC ENGINEERING**  
**VALUE ADDED COURSE**  
**MICROBIAL INOCULANT PRODUCTION TECHNOLOGY(2018-2019)**  
**Result Analysis**

S.No	Reg No	Name	Grade
1	U16BR022	UPAL JOSHI	S
2	U16BR023	VINODH KANNA K	S
3	U16BR028	VISHNU S	A
4	U16BR032	T BABA CHANDRIKA	B
5	U16BR033	SHALI THASNEEM	A
6	U16BR034	KAYAPOYOLLU NEELIMA	S
7	U16BR048	NARAPPAGARI RADHIKA	A
8	U16BR049	ASRITHA REDDY	S
9	U16BR050	KEERTHIVASU R	A
10	U16BR060	NAGARJUNA	S
11	U16BR061	SHARMILA	B
12	U16BR066	B LAKSHMI REDDY	A
13	U16BR067	NIKHIL CHARAN K	B
14	U16BR066	B LAKSHMI REDDY	A
15	U16BR067	NIKHIL CHARAN K	A
16	U16BR072	D YUVABHARATHI KANNAN	S
17	U16BR073	G SURYA PRAKASH	A
18	U16BT014	Puviyarasi S	A
19	U16BT015	Aswin M	B
20	U16BT017	Vedicherla Aswin Kumar	A
21	U16BT018	Penna Balakrishna	A
22	U16BT021	Deepika	A
23	U16BT022	Dara Vijay chandra Gangadhar Guptha	S
24	U16BT025	Ramavath Arun Naik	S
25	U16BT030	Manikandan.K	B
26	U16BT031	L. Rathna Kumar	B
27	U16BT501	Kaviya Lakshmi P	A
28	U16BM019	Ajeesh.P	S
29	U16BM021	Chryolyte precious rani.S	S
30	U16BM022	Sasikumar.J	A
31	U16BM023	Nawaz shariff.A	A
32	U16BM025	K.Achyuthareddy	S
33	U16BM028	Hariritusheshasainiharika	B
34	U16BM031	Tummasathvikphani rani teja	A
35	U16BM032	Kakanikarthik	B
36	U16BM034	Nehakumari	A
37	U16BM036	Tulabandulageethamadhuri	S



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**DEPARTMENT OF GENETIC ENGINEERING**  
**VALUE ADDED COURSE**  
**MICROBIAL INOCULANT PRODUCTION TECHNOLOGY(2018-2019)**  
**Students Feedback**

S.No	Reg No	Name	Rating
1	U16BR022	UPAL JOSHI	4.5
2	U16BR023	VINODH KANNA K	4.5
3	U16BR028	VISHNU S	4.5
4	U16BR032	T BABA CHANDRIKA	3
5	U16BR033	SHALI THASNEEM	4.4
6	U16BR034	KAYAPOYOLLU NEELIMA	3.5
7	U16BR048	NARAPPAGARI RADHIKA	4.5
8	U16BR049	ASRITHA REDDY	5
9	U16BR050	KEERTHIVASU R	4.5
10	U16BR060	NAGARJUNA	5
11	U16BR061	SHARMILA	4.6
12	U16BR066	B LAKSHMI REDDY	5
13	U16BR067	NIKHIL CHARAN K	4.4
14	U16BR066	B LAKSHMI REDDY	3.7
15	U16BR067	NIKHIL CHARAN K	4.5
16	U16BR072	D YUVABHARATHI KANNAN	4.5
17	U16BR073	G SURYA PRAKASH	5
18	U16BT014	Puviyarasi S	5
19	U16BT015	Aswin M	5
20	U16BT017	Vedicherla Aswin Kumar	5
21	U16BT018	Penna Balakrishna	4.5
22	U16BT021	Deepika	5
23	U16BT022	Dara Vijay chandra Gangadhar Guptha	4.5
24	U16BT025	Ramavath Arun Naik	5
25	U16BT030	Manikandan.K	4.5
26	U16BT031	L. Rathna Kumar	4
27	U16BT501	Kaviya Lakshmi P	5
28	U16BM019	Ajeesh.P	4.5
29	U16BM021	Chryolyte precious rani.S	5
30	U16BM022	Sasikumar.J	4
31	U16BM023	Nawaz shariff.A	4.5
32	U16BM025	K.Achyuthareddy	5
33	U16BM028	Hariritusheshasainiharika	5
34	U16BM031	Tummasathvikphani rani teja	5
35	U16BM032	Kakanikarthik	4.5
36	U16BM034	Nehakumari	5
37	U16BM036	Tulabandulageethamadhuri	4.5

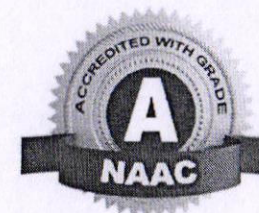




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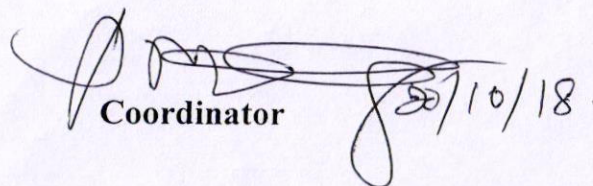


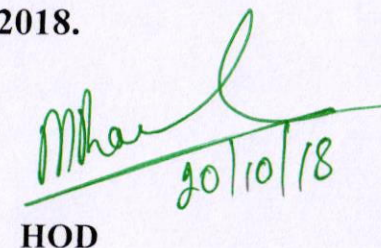
## SCHOOL OF BIO-ENGINEERING

### VALUE ADDED COURSE ON MICROBIAL INOCULANT PRODUCTION TECHNOLOGY

#### *Certificate of Participation*

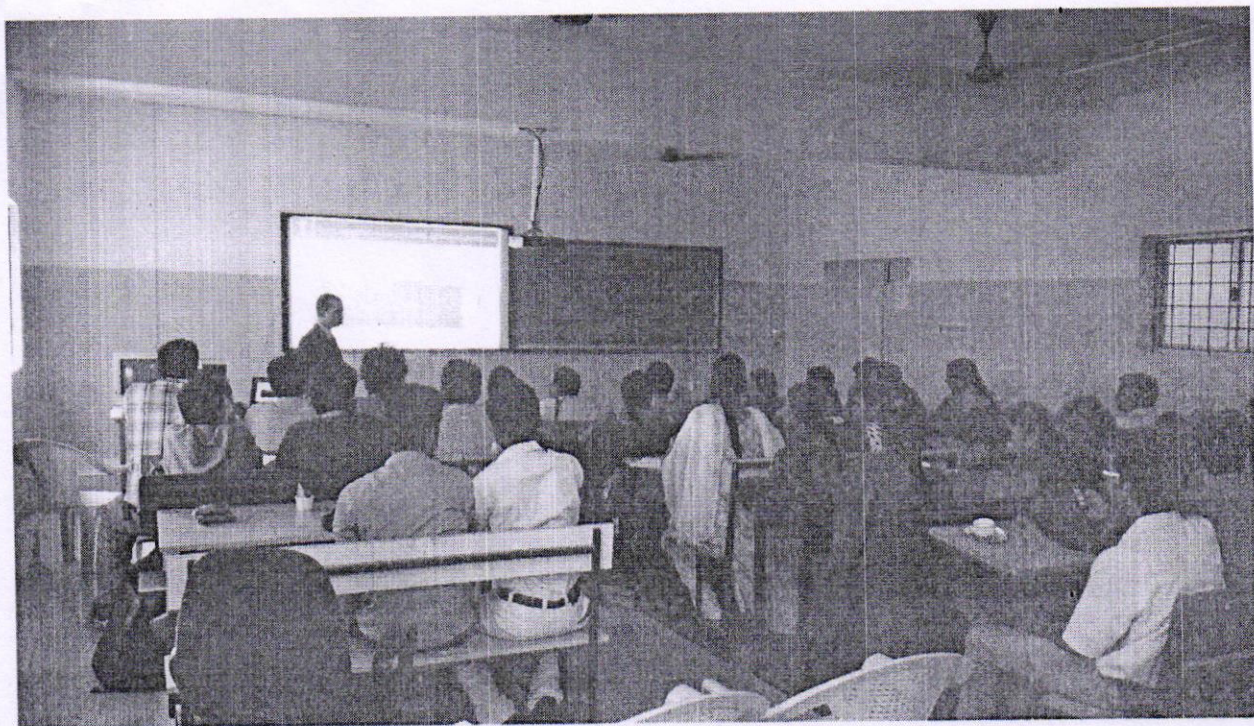
This is to certify that Mr /Ms P. Ajeesh (U16BM019) has attended three weeks value added course on Microbial Inoculant Production Technology conducted by Department of Genetic Engineering at Bharath Institute of Higher Education and Research, Chennai (TN), India during 5<sup>th</sup>- 20<sup>th</sup> October, 2018.

  
Coordinator 20/10/18.

  
HOD 20/10/18

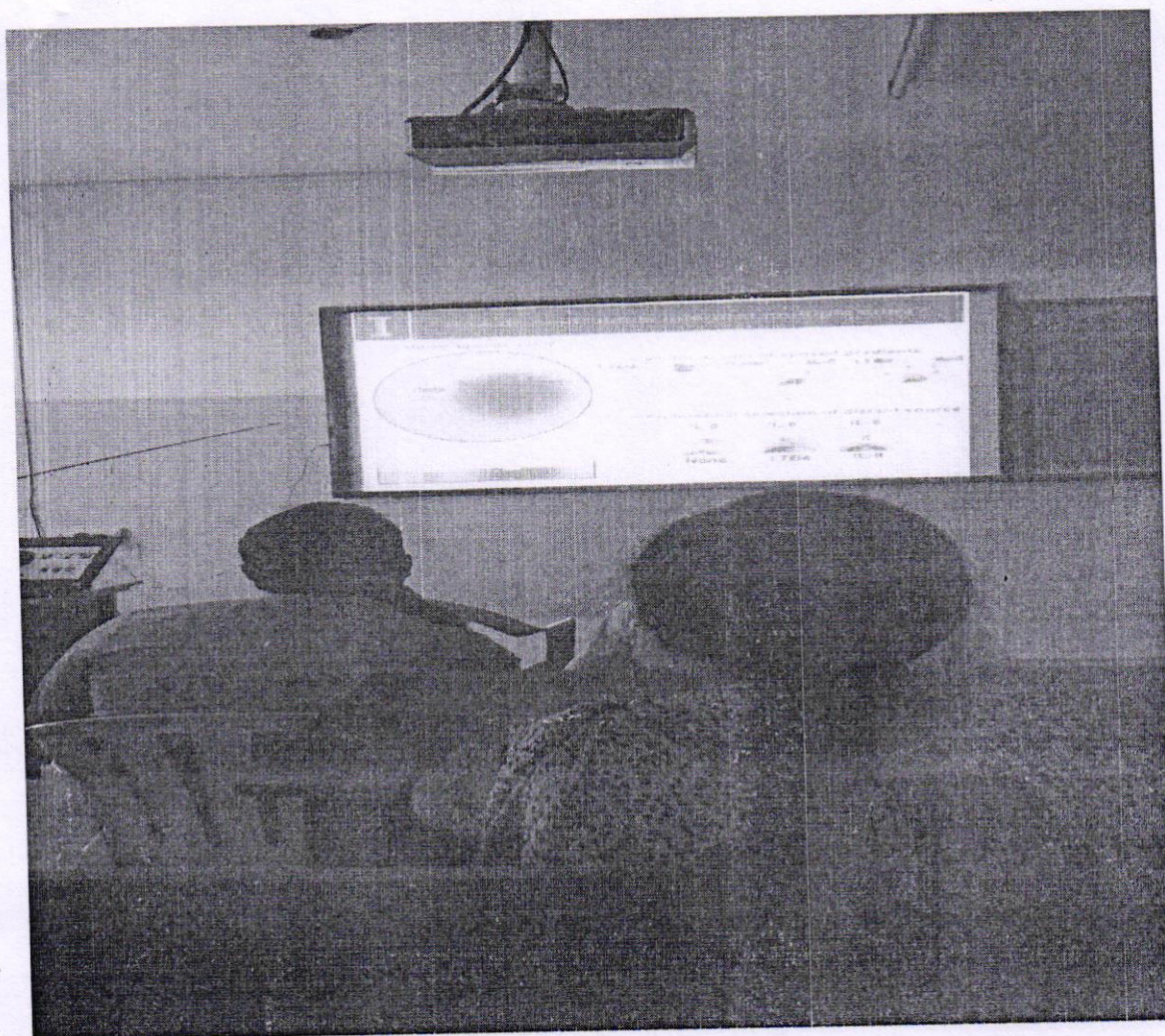
Dr. P.B. RAMESH BABU, Ph.D.,  
Professor and Head  
Department of Genetic Engineering  
BHARATH INSTITUTE OF HIGHER EDUCATION & RESEARCH  
(Declared as Deemed to be University U/S 3 of UGC Act. 1956)  
Chennai 600073 Tamil Nadu India





The value added course on "Microbial Inoculant Production technology" has been conducted by the Department of Genetic Engineering from 04/10/2018 to 20/10/2018 by the course co-ordinator Mr.A.Manikandan, Assistant Professor, BIHER.





The value added course on "Microbial Inoculant Production technology" has been conducted by the Department of Genetic Engineering from 04/10/2018 to 20/10/2018 by the course co-ordinator Mr.A.Manikandan, Assistant Professor, BIHER and 37 students attended the course.