



### STUDENTS FEEDBACK ON CURRICULUM

This questionnaire is to collect information relating to your satisfaction towards curriculum for creating conducive atmosphere for teaching and learning. The information provided by you will be kept confidential and will be used as important feedback for quality improvement of the program of studies/institution.

Academic Year	2014-2015
Branch	Biotechnology
Name of the Student	Rashmi
USN	15G11BT018

Rate the curriculum/syllabus on the following Points

SL NO	Statements	Excellent	Very good	Good	Average	Below Average
		5	4	3	2	1
1	How do you rate the syllabus of the courses that you have studied in relation to the competencies expected out of the course?	✓				
2	How do you rate the allocation of the credits to the courses?		✓			
3	Relevance for implementation in projects		✓			
4	How do you rate the electives offered in relation to the technological advancements?	✓				
5	How do rate the evaluation scheme designed for each of the course?	✓				
6	How do you rate the percentage of courses having LAB components?	✓				
7	Curriculum is sufficient to make you analyze the engineering problems and its suitable solution		✓			

Suggestions: Hands on experience are required

Signature Rashmi

  
**Principal**  
 Sapthagiri College of Engineering  
 Chikkasandra, Hebbaghalta Road  
 Bangalore-560 057





### STUDENTS FEEDBACK ON CURRICULUM

This questionnaire is to collect information relating to your satisfaction towards curriculum for creating conducive atmosphere for teaching and learning. The information provided by you will be kept confidential and will be used as important feedback for quality improvement of the program of studies/institution.

Academic Year	2014-2015
Branch	Biotechnology
Name of the Student	Vaishnavi Joshi
USN	18G11BT07

Rate the curriculum/syllabus on the following Points

SL NO	Statements	Excellent	Very good	Good	Average	Below Average
		5	4	3	2	1
1	How do you rate the syllabus of the courses that you have studied in relation to the competencies expected out of the course?	✓				
2	How do you rate the allocation of the credits to the courses?		✓			
3	Relevance for implementation in projects	✓	✓			
4	How do you rate the electives offered in relation to the technological advancements?		✓			
5	How do rate the evaluation scheme designed for each of the course?	✓	✓			
6	How do you rate the percentage of courses having LAB components?	✓	✓			
7	Curriculum is sufficient to make you analyze the engineering problems and its suitable solution		✓			

Suggestions: Continuously in syllabus required

Signature Vaishnavi

Principal  
 Sapthagiri College of Engineering  
 Chikkasandra, Hesaraghatta Road  
 Bangalore-560 057





### STUDENTS FEEDBACK ON CURRICULUM

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Academic Year	2014-15
Branch	Biotechnology
Name of the Student	Rohini
USN	15611BT019

Rate the curriculum/syllabus on the following Points

SL NO	Statements	Excellent	Very good	Good	Average	Below Average
		5	4	3	2	1
1	How do you rate the syllabus of the courses that you have studied in relation to the competencies expected out of the course?	✓				
2	How do you rate the allocation of the credits to the courses?		✓			
3	Relevance for implementation in projects	✓				
4	How do you rate the electives offered in relation to the technological advancements?		✓			
5	How do rate the evaluation scheme designed for each of the course?	✓				
6	How do you rate the percentage of courses having LAB components?	✓				
7	Curriculum is sufficient to make you analyze the engineering problems and its suitable solution	✓				

Suggestions:

*Rohini*

Signature

  
**Principal**  
**Sapthagiri College of Engineering**  
 Chikkasandra, Hesaraghatta Road  
 Bangalore-560 057





### ALUMNI FEEDBACK ON CURRICULUM

We are glad that you have spent valuable years pursuing courses of your choice at SCE. We shall be thankful if you can spare some of your valuable time to fill up this feedback form and give us valuable suggestions for further improvement of the College. Your valuable inputs will be of great use to improve the quality of our academic programs and enhance the credibility of our Institution. Rate the adequacy of following as they were during your tenure as a student

Year of Passing	2014
Branch	BIOTECHNOLOGY
Name	BHAVANA M
Status : Work/Study	STUDY
Phone no	

Rate the curriculum/syllabus on the following Points

SL NO	Statements	Excellent	Very good	Good	Average	Below Average
		5	4	3	2	1
1	When you compare yourself with other counterparts from other Institution, you feel that you got most of all the facilities which is not available in other Institution	/				
2	Learning value (in terms of skills, concepts, knowledge, analytical abilities or broadening perspectives)	/				
3	Curriculum is sufficient to make you analyze the engineering problems and its suitable solution		/			
4	How do you rate the learning experience in terms of their relevance to the real life application	/				
5	Ability to work in teams	/				
6	Ability to link theory to practice	/				
7	How do you rate the course/curriculum content that you have learnt in relation to your current job		/			
8	Compatibility with industry standards		/			

Suggestions:

*Bhavana M*  
Signature

*[Signature]*  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road  
Bangalore- 560 057





### FACULTY FEEDBACK ON CURRICULUM

This questionnaire is intended to collect information relating to your satisfaction towards the curriculum, teaching, learning and evaluation. The information provided by you will be kept confidential and will be used as important feedback for quality improvement of the program of studies/institution.

Academic Year	2014-15
Branch	Biotechnology
Name of the Faculty	Sowmya.C
Designation	Assistant Professor
Subject/Sub. code	Genomic & Proteomics

Rate the curriculum/syllabus on the following Points

SL NO	Statements	Excellent	Very good	Good	Average	Below Average
		5	4	3	2	1
1	Do you feel that the curriculum is defined in a way to clarify your teaching goals and what you expect your students to learn?	✓				
2	Is the curriculum sufficient to bridge the gap between industry standards /current global scenarios and academics?		✓			
3	Is the timely coverage of curriculum possible in the mentioned number of hours?	✓				
4	Sufficient reference material and books are available for the topics mentioned in the curriculum?	✓				
5	The evaluation methods mentioned in the curriculum are sufficient for providing proper assessment?		✓			
6	Curriculum is suitable to the course	✓				
7	The curriculum/course of this subject increased my knowledge and perspective in the subject area	✓				

Suggestions:

To the Benefit of student career programme shall be conducted

  
Signature

  
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# Sapthagiri College of Engineering

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## Department of Biotechnology

### CIRCULAR

Date: 25/05/2015

Academic committee members meeting for analyzing curriculum syllabus of Academic Year 2015-16. This is to inform that there will be a meeting of Academic committee members for analyzing curriculum syllabus of academic year 2015-16. The meeting is scheduled on 26/05/2015 at 12.30 pm in HOD's chamber.

Sl No.	Faculty Name	Designation	Signature
1	Dr. Ananda S	HOD, Professor	Ananda S
2	Dr. Rohit K C	Assistant Professor	Rohit K C
3	Prof. Prashanth Kumar H P	Assistant Professor	Prashanth Kumar H P
4	Prof. Soumya C	Assistant Professor	Soumya C
5	Prof. Shobha G	Assistant Professor	Shobha G

Ananda S  
Head of the Department  
HOD  
Dept. of Biotechnology  
Sapthagiri College of Engineering  
No. 57/1, Chikkasandra  
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Bangalore - 56

B  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road  
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## Department of Biotechnology

Date: 26/05/2015

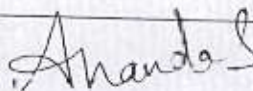




### MINUTES OF MEETING

With reference to circular dated on 25/05/2015, the academic committee member assembled in HODs chamber for addressing the following agenda.

**Agenda:**

- Reviewing department curriculum syllabus of Academic Year 2015-16
- Reviewing the feedback analysis of various stake holders of the academic year 2014-15
- Identifying the gaps
- Action to be taken for the identified gaps.

During the meeting the following members were present

Sl No.	Faculty Name	Designation	Signature
1	Dr. Aranca S	HOD, Professor	
2	Dr. Rohit K C	Assistant Professor	
3	Prof. Prashanth Kumar H P	Assistant Professor	
4	Prof. Soumya C	Assistant Professor	
5	Prof. Shobha G	Assistant Professor	

The following points were discussed in the meeting

1. The committee members reviewed the analysis of department curriculum syllabus.
2. The committee members discussed about the feedback of department curriculum syllabus.
3. The members identified the gaps based on the analysis.
4. The following actions were taken for the gaps that are identified.

  
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Chikkasandra, Hesaraghatta Road  
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### Department of Biotechnology

SL.NO	SEM	Course Title	Identified Gap
1	II Sem V Sem	Upstream processing	Lack of practical implementation

#### Action Taken:

Based on the feedback obtained from Students, Faculties and Alumni and analysis of syllabus by department academic committee members, it was decided to conduct certification course to overcome the gaps identified in the curriculum/syllabus.

*Anand S*  
 HOD, BT  
 Head of the Department  
 Dept. of Bio-Technology  
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## Department of Biotechnology

Date: 29/05/2015

To

IQAC Coordinator

Sapthagiri College of Engineering

Bengaluru-560 057

Respected sir/madam,

Subject: Requisition for conduction of certification course and approval from Governing Council.

With respect to the Academic committee members meeting was held for analyzing department curriculum/syllabus for the academic year 2015-16. The committee members identified few gaps after analyzing the syllabus and feedback from the stakeholders. To bridge the gaps identified in the curriculum, the committee members decided to conduct a certification course Callus Culture Techniques from 20<sup>th</sup> July 2015 to 25<sup>th</sup> July 2015 for the academic year 2015-16. So, I request you to forward and get the approval from the governing council for the same.

Thanking You,

Enclosure: Budget Proposal

*Forwarded to the  
approval / certification  
Jain*

*Ananda S*  
Head of the Department  
Dept. of Biotechnology  
Sapthagiri College of Engineering  
No. 57/1, Chikkasandra  
Hesaraghatta Main Road  
Bengaluru - 560057

*R*  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road  
Bengaluru-560 057



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## Department of Biotechnology

Date: 29/05/2015

To

IQAC Coordinator

Sapthagiri College of Engineering

Bengaluru-560 057

Respected sir/madam,

Subject: Budget Proposal for conduction of certification program on "Callus Culture Techniques"

The Budget Proposal for conduction a certificate program on Callus Culture Techniques from 20<sup>th</sup> July 2015 to 25<sup>th</sup> July 2015 is hereby enclosed for your kind consideration and approval.

The details of the recurring budge: are given as follows:

Recurring Amount:

Sl. No.	Description	Quantity	Amount in Rs.
1	Bouquet	1	200
2	Certificates	Students	2000
3	Others		1800
Total			4000

*Forwarded to the  
IQAC approval for certification*

*Amranda S*  
Head of the Department  
Dept. of ~~HOB~~ Technology  
Sapthagiri College of Engineering  
No. 57/1, Chikkasandra  
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Bangalore - 57

*B*  
Principal  
Sapthagiri College of Engineering  
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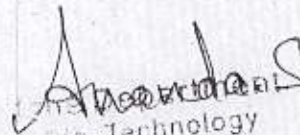
## Department of Biotechnology


07/07/2015

### CIRCULAR

This is to inform that the following Curriculum Board members are requested to attend the meeting on 08/07/2015 at 10.30 AM in the HODs chamber to decide the syllabus and lesson plan for the certification program on Callus culture Techniques.

Sl No.	Faculty Name	Designation	Signature
1	Dr. Ananda S	HOD, Professor	Ananda S
2	Dr. Rohit K C	Assistant Professor	Rohit K C
3	Prof. Prashanth Kumar H P	Assistant Professor	Prashanth Kumar H P
4	Prof. Soumya C	Assistant Professor	Soumya C
5	Prof. Shobha G	Assistant Professor	Shobha G

  
Ananda S  
HOD  
Department of Biotechnology  
Sapthagiri College of Engineering  
#14/5, Chikkasandra  
Hesaraghatta Main Road  
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Principal  
Sapthagiri College of Engineering  
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### Department of Biotechnology

Date: 07-07-2015

To,

Mr. Rohith Raj  
Managing Partner  
Chlorbios Pvt. Ltd.  
Yalahanka  
Bangalore.

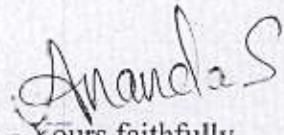
Respected Sir,

Subject: Invitation as a "Guest Speaker" in certification program and to attend meeting to discuss about the certification program

Department of Biotechnology have planned to conduct a certification program titled "Callus Culture Techniques" for 3<sup>rd</sup> and 5<sup>th</sup> semester students from 20<sup>th</sup> July 2015 to 25<sup>th</sup> July 2015. In this connection, we are privileged to invite you as a guest speaker on the above mentioned topic.

Thanking you for your kind acceptance to our request on phone. We request you to attend the meeting to discuss about the conduction of certification course on 08/07/2015 at 10.30 AM. We look forward to welcome you at SCE.

Thanking you

  
Yours faithfully  
Head of the Department  
Dept. of Bio-Technology  
Sapthagiri College of Engineering  
R/o. 57/1, Chikkasandra  
Hesaraghatta Main Road  
Bangalore - 56  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta  
Bangalore-560057



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## Department of Biotechnology

### Minutes of Meeting

A meeting was conducted on 08-Jul-2015 in BT HoD's Chamber to discuss and approve the syllabus and schedule of the one week Certification Course for 3<sup>rd</sup> & 5<sup>th</sup> semester BT Students.

- **Course Title :** Callus Culture Techniques
- **Resource Personnel:** Mr.Rohith Raj, CEO Chlorbios Pvt.Ltd.Yalahanka Bangalore.
- **Course Duration & Date:** One week from 20<sup>th</sup> July 2015 to 25<sup>th</sup> July 2015

Syllabus and schedule of the certification Program

Date	Time	Topics
20-7-2015	8:30 AM - 10:15 AM	Introduction to Callus culture and its application
	10:30 AM - 12:30 PM	Media used in callus production
	1:30PM - 4.30PM	Hands on preparation of different types of media for plant cell culture
21-7-2015	8:30 AM - 10:15 AM	Callus culture techniques, stages of callus culture
	10:30 AM - 12:30 PM	Physical appearance of callus, Development of aseptic callus culture
	1:30PM - 4.30PM	Hands on session inoculation of explants
22-7-2015	8:30 AM - 10:15 AM	Introduction to organ culture
	10:30 AM - 12:30 PM	Types of organogenesis, <del>active</del>
	1:30PM - 4.30PM	Hands on session on growth measurement of callus culture, Sub culture of callus culture
23-7-2015	8:30 AM - 10:15 AM	Plant regeneration, Histological study
	10:30 AM - 12:30 PM	Plant morphogenesis
	1:30PM - 4.30PM	Hands on session on adventitious shoot and root formation
24-7-2015	8:30 AM - 10:15 AM	Embryogenesis
	10:30 AM - 12:30 PM	Advantage of embryogenesis
	1:30PM - 4.30PM	Hands on session on checking Physio-chemical parameters affecting somatic embryogenesis
	8:30 AM - 10:15 AM	Hairy root culture

*[Signature]*  
Principal  
Sapthagiri College of Engineering  
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### Department of Biotechnology

25-7-2015	10:30 AM - 12:30 PM	Methodology of hairy root culture, Advantage of hairy root culture
	1:30PM - 4:30PM	Hands on session on Methodology of hairy root culture.

The following Curriculum board members were present in the meeting and the syllabus and lesson plan for the certification program has been decided

Sl No.	Faculty Name	Designation	Signature
1	Dr. Ananda S	HOD, Professor	Ananda S
2	Dr. Rohit K C	Assistant Professor	Rohit K C
3	Prof. Prashanth Kumar H P	Assistant Professor	Prashanth Kumar H P
4	Prof. Soumya C	Assistant Professor	Soumya C
5	Prof. Shetha G	Assistant Professor	Shetha G
6	Mr. Rohith Raj	Guest Speaker	Rohith Raj

Ananda S  
Head of the Department  
Dept. of Biotechnology  
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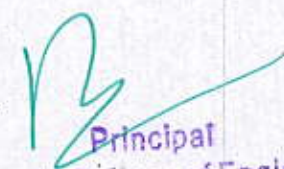
### Department of Biotechnology

Date: 10/07/2015

### NOTICE

As a part of programming skill development Department of Information Science and Engineering is conducting one week Certification Course on  
● **“Callus Culture Techniques”** from 20<sup>th</sup> July 2015 to 25<sup>th</sup> July 2015. All the 3<sup>rd</sup> & 5<sup>th</sup> SEM BT students must attend the course compulsorily.

  
Signature of HOD  
Dept. of Bio-Technology  
Sapthagiri College of Engineering  
No. 14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru - 560057

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Main Road, Bengaluru - 560057



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## Department of Biotechnology

### Certification Program on "Callus culture Techniques"

#### Academic Year 2015-16

#### Students Enrollment

Sl.No.	USN	Student Name
1	ISG13BT001	AAYUSHI MISHRA
2	ISG13BT003	AJAY KUMAR YADAV
3	ISG13BT004	AKASH.R
4	ISG13BT005	ASHWINI N
5	ISG13BT006	BHARGAVI DUBEY J
6	ISG13BT007	CHETAN S
7	ISG13BT008	DEEPTI
8	ISG13BT009	DIVYA B K
9	ISG13BT010	DIVYA C
10	ISG13BT011	DIVYASHREE A N
11	ISG13BT012	GOWTHAMI K V
12	ISG13BT013	JAIKRATHIK J
13	ISG13BT014	KRUTIKA SHETTY
14	ISG13BT015	LAVANYA.S
15	ISG13BT016	LIJIN K LITSON
16	ISG13BT017	MADHURI BHAT S
17	ISG13BT018	MOHAN KUMAR N
18	ISG13BT019	MUZZAMMIL AHMED
19	ISG13BT020	SPOORTHY N
20	ISG13BT022	PAREEKSHITH J
21	ISG13BT023	PAVITHRA VENI
22	ISG13BT024	POOJA SINGH
23	ISG13BT025	L PRAVEEN KUMAR
24	ISG13BT026	PREETHI M
25	ISG13BT027	DISHA R
26	ISG13BT028	RAKSHA P A
27	ISG13BT029	RAKSHITHA H S
28	ISG13BT030	S D SIRI
29	ISG13BT031	SAGAR S
30	ISG13BT032	SHARON NAINA RAVISHANKAR
31	ISG13BT033	SHIVANGI DUBEY
32	ISG13BT034	SHIVARAJ V
33	ISG13BT035	SOORYA SESHADRI
34	ISG13BT036	SOUNDARYASRI S
35	ISG13BT037	SUBHASH KUMAR SHARMA
36	ISG13BT038	SUPRIYA MORE
37	ISG13BT039	VARSHA PRAKASH
38	ISG13BT040	VIJITHA T P
39	ISG13BT041	YASHASHWINI S
40	ISG13BT042	AKSHAY KUMAR YADAV
41	ISG13BT043	KUSUMA.B.M
42	ISG13BT044	LAVANYA M N
43	ISG13BT045	RUCHITHA N KUMAR
44	ISG13BT047	SHIVANI

*Principal*  
Sapthagiri College of Engineering  
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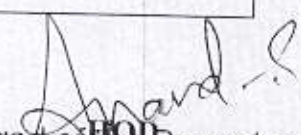
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### Department of Biotechnology

45	ISG12BT022	SAYEED AHMED KHAN
46	ISG14BT001	A.RITISH
47	ISG14BT002	AASTHA KAMBOJ
48	ISG14BT003	AKSHATHA J
49	ISG14BT004	AMEERKHAN
50	ISG14BT007	ANITHA.M
51	ISG14BT009	ARUN D K
52	ISG14BT010	ASHA PRANAVLM
53	ISG14BT012	AYANA E K
54	ISG14BT013	CHANDANA.P
55	ISG14BT015	DHEESHA.B.S
56	ISG14BT016	HARISH.G
57	ISG14BT017	HINDUSHREE.J
58	ISG14BT018	K A VINAY
59	ISG14BT021	MANISH KUMAR. M
60	ISG14BT022	MEERAN HUSSAIN
61	ISG14BT023	MEGHANA M
62	ISG14BT024	MEGHANA.M
63	ISG14BT025	MOHIT KUMAR SINGH
64	ISG14BT026	NAVEEN .S
65	ISG14BT027	NIRANJANA.S
66	ISG14BT031	SHRIPRABHA R UPADHYAYA
67	ISG14BT032	SHWETHA H
68	ISG14BT033	SIDHARTH.M.V
69	ISG14BT034	SINDHU K
70	ISG14BT035	SNEHA
71	ISG14BT036	SNEHA.P.R
72	ISG14BT037	SONALI S.KAMATH
73	ISG14BT039	VANI VISWANATHAN
74	ISG14BT041	VEENA G V
75	ISG14BT042	VIBHA M
76	ISG14BT043	VIDYA G V
77	ISG14BT044	VIKERAMAN S
78	ISG14BT045	YAMINI S ACHARYA
79	ISG14BT046	YESHWANTH.J
80	ISG12BT022	SAYEED AHMED KHAN
81	ISG13BT042	AKSHAY KUMAR
82	ISG13BT047	SHIVANI

  
COORDINATOR

  
Head of the Department  
Dept. of Bio -Technology  
Sapthagiri College of Engineering  
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# Sapthagiri College of Engineering

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## Department of Biotechnology

### Certification Course on "Callus Culture Techniques"

#### Attendance

Sl No.	USN	Student Name	20/7/15		21/7/15		22/7/15		23/7/15		24/7/15		25/7/15	
			MS	AS	MS	AS	MS	AS	MS	AS	MS	AS	MS	AS
1	ISG13BT001	AAYUSHI MISHRA	1	2	3	4	5	6	7	8	9	10	11	12
2	ISG13BT003	AJAY KUMAR YADAV	1	2	3	4	5	6	7	8	9	10	11	12
3	ISG13BT004	AKASH R	1	2	3	4	5	6	7	8	9	10	11	12
4	ISG13BT005	ASHWINI N	1	2	3	4	5	6	7	8	9	10	11	12
5	ISG13BT006	BHARGAVI DUBEY J	1	2	3	4	5	6	7	8	9	10	10	11
6	ISG13BT007	CHETAN S	1	2	3	4	5	6	7	8	9	10	11	12
7	ISG13BT008	DEEPTI	1	2	3	4	5	6	7	8	9	10	11	12
8	ISG13BT009	DIVYA B K	1	2	3	4	5	6	7	8	9	10	11	12
9	ISG13BT010	DIVYA C	1	2	3	4	5	6	7	8	9	10	11	12
10	ISG13BT011	DIVYASHREE A N	1	2	3	4	5	6	7	8	9	10	11	12
11	ISG13BT012	GOWTHAMI K V	1	2	3	4	5	6	7	8	9	10	11	12
12	ISG13BT013	JAIKRARTHIK J	1	2	3	4	5	6	6	7	8	9	10	11
13	ISG13BT014	KRUTIKA SHETTY	1	2	3	4	5	6	7	8	9	10	11	12
14	ISG13BT015	LAVANYA S	1	2	3	4	5	6	7	8	9	10	11	12
15	ISG13BT016	LJIN K LITSON	1	2	2	3	4	5	6	7	8	9	10	11
16	ISG13BTC17	MADHURI BHAT S	1	2	3	4	5	6	7	8	9	10	11	12
17	ISG13BTC18	MOHAN KUMAR N	1	2	3	4	5	6	7	8	9	10	11	12
18	ISG13BTC19	MUZZAMMIL AHMED	1	2	3	4	5	6	7	8	9	10	11	12
19	ISG13BTC20	SPOORTHY N	1	2	3	4	5	6	7	8	9	10	11	12
20	ISG13BT022	PAREEKSHITH J	1	2	3	4	5	6	7	8	9	10	11	12
21	ISG13BT023	PAVITERA VENI	1	2	3	4	5	6	7	8	9	10	11	12
22	ISG13BT024	POOJA SINGH	1	2	3	4	5	6	7	8	9	9	10	11
23	ISG13BT025	L PRAVEEN KUMAR	1	2	3	4	5	6	7	8	9	10	11	12
24	ISG13BT026	PREETHI M	1	2	3	4	5	6	7	8	9	10	11	12
25	ISG13BT027	DISHA R	1	2	3	4	5	6	7	8	9	10	11	12

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26	ISG13BT028	RAKSHA P A	1	2	3	4	5	6	7	8	9	10	11	12
27	ISG13BT029	RAKSHITHA H S	1	2	3	4	5	6	7	8	9	10	11	12
28	ISG13BT030	S D SIRI	1	2	3	4	5	6	7	8	9	10	11	12
29	ISG13BT031	SAGAR S	1	2	3	4	5	6	7	8	9	10	11	12
30	ISG13BT032	SHARON NAINA RAVISHANKAR	1	2	3	4	5	6	7	8	9	10	11	12
31	ISG13BT033	SHIVANGI DUBEY	1	2	3	4	5	6	7	8	9	10	11	12
32	ISG13BT034	SHIVARAJ V	1	2	3	4	5	6	7	8	9	10	11	12
33	ISG13BT035	SOORYA SESHADRI	1	2	3	4	5	6	7	8	9	10	11	12
34	ISG13BT036	SOUNDARYASRI S	1	2	3	4	5	6	7	8	9	10	11	12
35	ISG13BT037	SUBHASH KUMAR SHARMA	1	2	3	4	5	6	7	8	9	10	11	12
36	ISG13BT038	SUPRIYA MORE	1	2	3	4	5	6	7	8	9	10	11	12
37	ISG13BT039	VARSHA PRAKASH	1	2	3	4	5	6	7	8	9	10	11	12
38	ISG13BT040	VIJITHA T P	1	2	3	4	5	6	7	8	9	10	11	12
39	ISG13BT041	YASHASHWINI S	1	2	3	4	5	6	7	8	9	10	11	12
40	ISG13BT042	AKSHAY KUMAR YADAV	1	2	3	4	5	6	7	8	9	10	10	11
41	ISG13BT043	KUSUMA.B.M	1	2	3	4	5	6	7	8	9	10	11	12
42	ISG13BT044	LAVANYA M N	1	2	3	4	5	6	7	8	9	10	11	12
43	ISG13BT045	RUCHITHA N KUMAR	1	2	3	4	5	6	7	8	9	10	11	12
44	ISG13BT047	SHIVANI	1	2	3	4	5	6	6	7	8	9	10	11
45	ISG12BT022	SAYEED AHMED KHAN	1	2	3	4	5	6	7	8	9	10	11	12
46	ISG14BT001	A.RITISH	1	2	3	4	5	6	7	8	9	10	11	12
47	ISG14BT002	AASTHA KAMBOJ	1	2	3	4	5	6	7	8	9	10	11	12
48	ISG14BT003	AKSHATHA. J	1	2	3	4	5	6	7	8	9	10	11	12
49	ISG14BT004	AMEERKHAN	1	2	3	4	5	6	7	8	9	10	11	12
50	ISG14BT007	ANITHA.M	1	2	3	4	5	6	7	8	9	10	11	12
51	ISG14BT009	ARUN D K	1	2	3	4	5	6	7	8	9	10	11	12
52	ISG14BT010	ASHA PRANAVI.M	1	2	3	4	5	6	7	8	9	10	11	12
53	ISG14BT012	AYANA E K	1	2	3	4	5	6	7	8	9	10	11	12
54	ISG14BT013	CHANDANA.P	1	2	3	4	5	6	7	8	9	10	11	12
55	ISG14BT015	DHEESHA.B.S	1	2	3	4	5	6	7	8	9	10	11	12

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56	ISG14BT016	HARISH LG	1	2	3	4	5	6	7	8	9	10	11	12
57	ISG14BT017	HINDUSREEJ	1	2	3	4	5	6	7	8	9	10	11	12
58	ISG14BT018	KAVINAY	1	2	3	4	5	6	7	8	9	10	11	12
59	ISG14BT021	MANISH KUMAR. M	1	2	3	4	5	6	7	8	9	10	11	12
60	ISG14BT022	MEERAN HUSSAIN	1	2	3	4	5	6	7	8	9	10	11	12
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66	ISG14BT031	SHRIPRABHA R UPACHYAYA	1	2	3	4	5	6	7	8	9	10	11	12
67	ISG14BT032	SHWETHA H	1	2	3	4	5	6	7	8	9	10	11	12
68	ISG14BT033	SIDHARTH M. V	1	2	3	4	5	6	7	8	9	10	11	12
69	ISG14BT034	SINDHU K	1	2	3	4	5	6	7	8	9	10	11	12
70	ISG14BT035	SNEHA	1	2	3	4	5	6	7	8	9	10	11	12
71	ISG14BT036	SNEHA P R	1	2	3	4	5	6	7	8	9	10	11	12
72	ISG14BT037	SONALI S. KAMATH	1	2	3	4	5	6	7	8	9	10	11	12
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### Department of Biotechnology

#### Certification Course on "Callus Culture Techniques"

#### Test Time Table

Sl. No.	DATE	DAY	TIMINGS
1	25/7/2015	Saturday	3:45 pm - 4:45 pm

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## Department of Biotechnology

### CERTIFICATION COURSE ON CALLUS CULTURE TECHNIQUES

#### QUESTION PAPER

Duration: 1hr

Maximum marks: 25

Note: Question number 1-15 (1M each)

Question number 16-20 (2M each)

1. Cell fusion method includes the preparation of large number of
    - a) plant cells stripped of their cell wall
    - b) single plant cell stripped of their cell wall
    - c) plant cells with cell wall
    - d) cells from different species
  2. Sub culturing is similar to propagation by cuttings because
    - a) it separates multiple microshoots and places them in a medium
    - b) it uses scions to produce new microshoots
    - c) they both use in vitro growing conditions
    - d) all of the above
  3. The ability of the component cells of callus to form a whole plant is known as
    - a) Redifferentiation
    - b) Dedifferentiation
    - c) either (a) or (b)
    - d) none of these
  4. What is/are the benefit(s) of micropropagation or clonal propagation?
    - a) Rapid multiplication of superior clones
    - b) Multiplication of disease free plants
    - c) Multiplication of sexually derived sterile hybrids
    - d) All of the above
  5. When plated only in nutrient medium, how much time is required for the protoplast to synthesize new cell wall?
    - a) 2-5 days
    - b) 5-10 days
    - c) 10-15 days
    - d) 15-17 days
  6. Cellular totipotency is the property of
    - a) Plants
    - b) Animals
    - c) Bacteria
    - d) all of these
- Agrobacterium based gene transfer is efficient
  - a) only with dicots
  - b) only with monocots
  - c) with both monocots and dicots
  - d) with majority monocots and few dicots

  
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## Department of Biotechnology

7. Who is the father of tissue culture?

- a) Bonner b) Haberlandt c) Laibach d) Gautheret

8. The production of secondary metabolites require the use of

- a) Protoplast b) Cell suspension c) Meristem d) Auxillary buds

9. Synthetic seed is produced by encapsulating somatic embryo with

- a) Sodium Chloride b) Sodium alginate c) Sodium acetate d) Sodium nitrate

10. Hormone pair required for a callus to differentiate are

- a) Auxin and cytokinin b) Auxin and ethylene c) Auxin and abscisic acid d) Cytokinins and gibberellin

11. DMSO (dimethyl sulfoxide) is used as

- a) Gelling agent b) Alkylating agent c) Chelating agent d) Cryoprotectant

12. The most widely used chemical for protoplast fusion, as fusogen is

- a) Mannitol b) Sorbitol c) Mannol d) Polyethylene glycol

13. Cybrids are produced by

- a) Fusion of two different nuclei from two different species b) Fusion of two same nuclei from same species c) Nucleus of one species but cytoplasm from both the parent species d) None of the above

14. Callus is

- a) Tissue that forms embryo b) An insoluble carbohydrates c) Tissue that grows to form embryoid d) Un organized actively dividing mass of cells maintained in cultured

15. Part of plant used for culturing is called

- a) Scion b) Explant c) Stock d) Callus Growth hormone producing apical dominance

16. Define callus? Explain the stages of callus culture:

17. Explain the application of callus culture:

18. What are the factors affecting the callus induction?

19. Methods used for measuring the growth of callus

  
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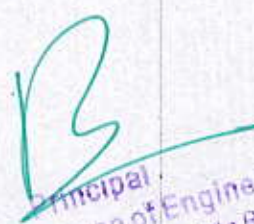
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### Department of Biotechnology

20. Brief on the callus induction technique

Approved by Academic Committee members:

Sl No.	Faculty Name	Designation	Signature
1	Dr. Ananda S	HOD, Professor	Ananda S
2	Dr. Rohit K C	Assistant Professor	
3	Prof. Prashanth Kumar H P	Assistant Professor	
4	Prof. Soumya C	Assistant Professor	
5	Prof. Shobha G	Assistant Professor	
6	Mr. Rohith Raj	Guest Speaker	

  
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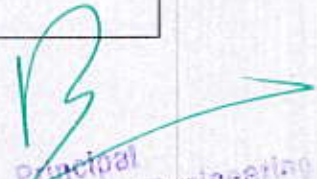
### Certification Course on "Callus culture Techniques"

#### Solutions for the Questions

Duration: 1hr

Maximum marks: 25

1.	Answer 1:	Option B
2.	Answer 2:	Option B
3.	Answer 3:	Option D
4.	Answer 4:	Option C
5.	Answer 5:	Option A
6.	Answer 6:	Option D
7.	Answer 7:	Option B
8.	Answer 8:	Option D
9.	Answer 9:	Option B
10.	Answer10:	Option A
11.	Answer 11:	Option B
12.	Answer12:	Option D
13.	Answer13:	Option B
14.	Answer 14:	Option C
15.	Answer15:	Option B

  
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16. Callus is a growing mass of unorganized plant parenchyma cells. The three stages of callus culture are - Induction - cells in explant dedifferentiate and begin to divide. Proliferative stage - rapid cell division. Morphogenesis stage - differentiation and formation of organized structure that lead to plant regeneration from somatic cells.

17. It is used in rescue of endangered species of plants, Callus produced can be for synthesis of bioactive secondary metabolites, Generation of plants with improved resistance against salt, diseases and pests, To produce commercially important crops in all seasons, It gives high yield in less time.

18. Hormones - concentration of auxin and cytokinin, Temperature, Photoperiod, Age of the explant

19. Settled cell volume (SCV) and Packed cell volume (PCV) - SCV is the percentage of total volume of suspension occupied by the cell mass. PCV is the total volume of suspension occupied by the cell mass after centrifugation. Culture cell density - This is estimated by incubating cell culture with 8% Chromium trioxide solution or using hydrolytic enzymes such as cellulase and pectinase. Cell viability - A staining reagent, fluorescein diacetate is widely used to check viability. Medium Conductivity - By the application of electromagnetic field, an electroporation is used to determine medium conductivity.

20. Media preparation - callus media consists of agar and mixture of macronutrients and micronutrients. The most commonly used tissue culture media is Murashige and Skoog Medium, white media and woody plant medium. Explant plant selection and sterilization - the plant of interest is selected and subjected to sterilization using double distilled water, Bavistin and Tween 20. Inoculation - The sterilized explant was inoculated into the appropriate medium. Incubation - The inoculated media was incubated for 16 hours in light and 8 hours in dark. Sub culturing - After the formation of callus, the mother culture is subjected to sub culturing.

  
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3	Prof. Prashant Kumar H P	Assistant Professor	Prashant Kumar H P
4	Prof. Soumya C	Assistant Professor	Soumya C
5	Prof. Shobha G	Assistant Professor	Shobha G
6	Mr. Rohith Raj	Guest Speaker	Rohith Raj

  
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## Department of Biotechnology

### Certification Course on "Callus Culture Techniques"

#### Participant Feedback

1. How was the overall organization of the Certification Course?  
a) Poor b) Satisfactory c) Good d) Excellent
2. How appropriate were the facilities provided?  
a) Poor b) Satisfactory c) Good d) Excellent
3. Opportunity to ask questions for clarification and interaction with presenters  
a) Poor b) Satisfactory c) Good d) Excellent
4. Effectiveness of the Hands-on Sessions  
a) Poor b) Satisfactory c) Good d) Excellent
5. Topic and contents of the Certification Course  
a) Poor b) Satisfactory c) Good d) Excellent
6. How do you rate the Certification Course compared to other workshops that you have attended?  
a) Poor b) Satisfactory c) Good d) Excellent
7. Generally how was your overall experience during the Certification Course  
a) Poor b) Satisfactory c) Good d) Excellent
8. Any Suggestions:

Student Name: KUSOMA

Student Signature: Kusoma

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8. Any Suggestions:

Student Name:

*Sharon raise*

Student Signature:

*Sharon raise*

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a) Poor b) Satisfactory c) Good d) ~~Excellent~~
5. Topic and contents of the Certification Course  
a) Poor b) Satisfactory c) ~~Good~~ d) Excellent
6. How do you rate the Certification Course compared to other workshops that you have attended?  
a) Poor b) Satisfactory c) ~~Good~~ d) Excellent
7. Generally how was your overall experience during the Certification Course  
a) Poor b) Satisfactory c) Good d) ~~Excellent~~
8. Any Suggestions:

certification duration to be extended

Student Name: Bhargavi Dileeg

Student Signature: Bhargavi Dileeg

*[Stamp]*  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road  
Bangalore-560057





## Sapthagiri College of Engineering

(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)  
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru - 560057  
Phone: 080-28372800/1/2 www.sapthagiri.edu.in Fax: 080-28372797

### Department of Biotechnology

#### Certification Course on "Callus Culture Techniques"

#### Participant Feedback

1. How was the overall organization of the Certification Course?  
a) Poor b) Satisfactory c) ~~Good~~ d) Excellent
2. How appropriate were the facilities provided?  
a) Poor b) Satisfactory c) Good d) ~~Excellent~~
3. Opportunity to ask questions for clarification and interaction with presenters  
a) Poor b) Satisfactory c) Good d) ~~Excellent~~
4. Effectiveness of the Hands-on Sessions  
a) Poor b) Satisfactory c) Good d) ~~Excellent~~
5. Topic and contents of the Certification Course  
a) Poor b) Satisfactory c) Good d) ~~Excellent~~
6. How do you rate the Certification Course compared to other workshops that you have attended?  
a) Poor b) Satisfactory c) ~~Good~~ d) Excellent
7. Generally how was your overall experience during the Certification Course  
a) Poor b) Satisfactory c) ~~Good~~ d) Excellent
8. Any Suggestions:

Student Name: Mohankumar

Student Signature: Mohankumar

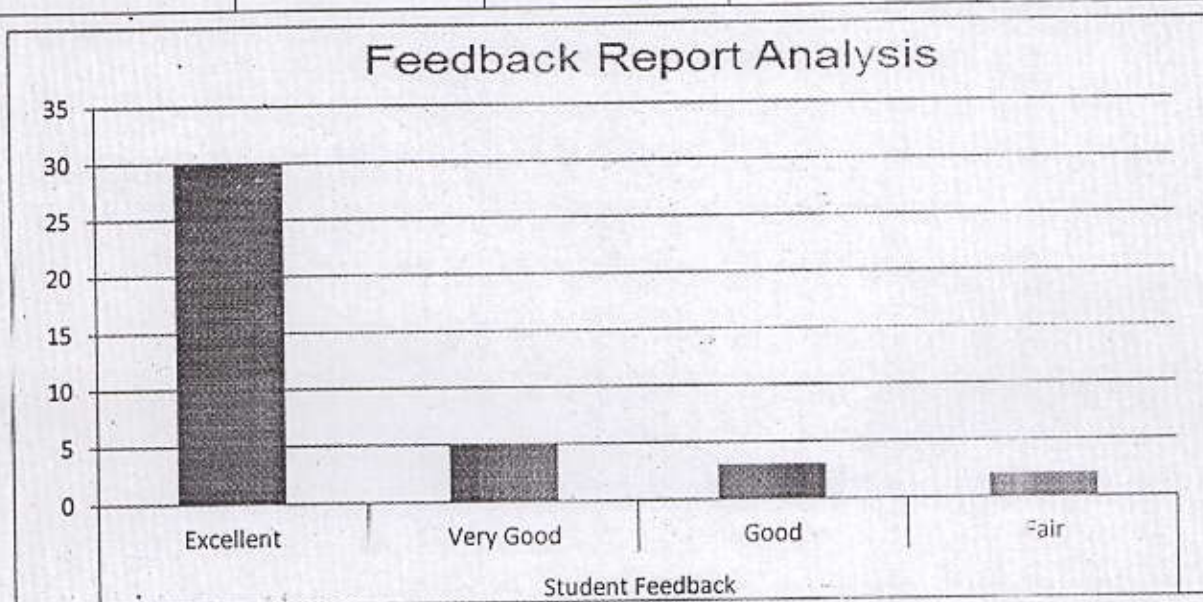
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road  
Bangalore-560057



### FEEDBACK ANALYSIS

Certification Programme: "Callus Culture Techniques"

No. of students participated	Student Feedback			
	Excellent	Very Good	Good	Fair
40	30	5	3	2



#### Action Report:

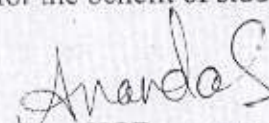
75 % of students were completely happy with the certification program and 12 % of students felt it was a good program and remaining 5 % students were satisfied with the program.

#### Action Taken:

The Feedback report which was collected from the students were sent to the principal and he would take necessary actions based on the comments and conduct more programs for the benefit of students.

  
Program Coordinator

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Main Road  
Bangalore-560057

  
HOD  
Head of the Department  
Dept. of Bio-Technology  
Sapthagiri College of Engineering  
No. 57/1, Chikkasandra  
Hesaraghatta Main Road  
Bangalore -57





**CERTIFICATE COURSE  
ON  
CALLUS CULTURE TECHNIQUES**

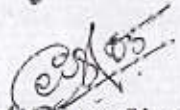


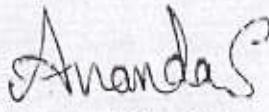
**This is to certify that**


Mr./Ms.. .....CHETAN.S.....

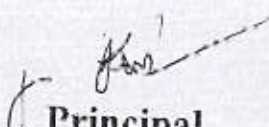
Of IIIrd/Vth Semester Biotechnology has successfully completed  
CALLUS CLTURE TECHNIQUES organized by Department of  
Biotechnology, Sapthagiri College of Engineering, Bengaluru-57 and  
CHLORBIOS PVT LTD, Bengaluru-560106 from 20<sup>th</sup> July 2015 to 25<sup>th</sup>

**July 2015**

  
Chief Coordinator

  
Head  
Department of BT

  
Managing Partner  
CHLORBIOS PVT LTD

  
Principal  
SCE

Sapthagiri College of Engineering  
Chikkasandra, Kesaraghatta Road  
Bangalore-560057  
Principal





**CERTIFICATE COURSE  
ON  
CALLUS CULTURE TECHNIQUES**

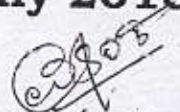


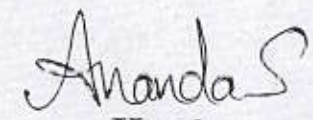
**This is to certify that**

Mr./Ms.. ..... DIVYA C .....

Of IIIrd/Vth Semester Biotechnology has successfully completed  
CALLUS CLTURE TECHNIQUES organized by Department of  
Biotechnology, Sapthagiri College of Engineering, Bengaluru-57 and  
CHLORBIOS PVT LTD, Bengaluru-560106 from 20<sup>th</sup> July 2015 to 25<sup>th</sup>

**July 2015**

  
Chief Coordinator

  
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Managing Partner  
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Principal  
SCE

Sapthagiri College of Engineering  
Chikkasandra, Heasarahatti Road  
Bengaluru-560057  
Principal





**CERTIFICATE COURSE  
ON  
CALLUS CULTURE TECHNIQUES**

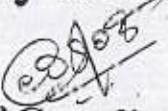


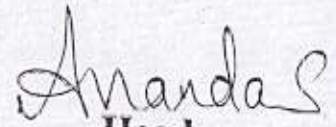
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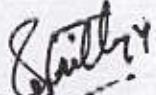
Mr./Ms.. ..... S D SIRI .....

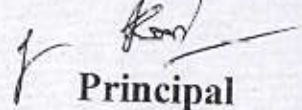
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Biotechnology, Sapthagiri College of Engineering, Bengaluru-57 and  
CHLORBIOS PVT LTD, Bengaluru-560106 from 20<sup>th</sup> July 2015 to 25<sup>th</sup>

**July 2015**

  
Chief Coordinator

  
Head  
Department of BT

  
Managing Partner  
CHLORBIOS PVT LTD

  
Principal  
SCE

Sapthagiri College of Engineering  
Chikkasandra, Hesarghatta Road  
Bangalore-560 057





**CERTIFICATE COURSE  
ON  
CALLUS CULTURE TECHNIQUES**



**This is to certify that**

**Mr./Ms. ....**

**Of IIIrd/Vth Semester Biotechnology has successfully completed  
CALLUS CLTURE TECHNIQUES organized by Department of  
Biotechnology, Sapthagiri College of Engineering, Bengaluru-57  
and CHLORBIOS PVT LTD, Bengaluru-560106 from 20<sup>th</sup> July  
2015 to 25<sup>th</sup> July 2015**

**Chief  
Coordinator**

**Head  
Department of BT**

**Managing Partner  
CHLORBIOS PVT LTD**

**Principal  
SCE**

Sapthagiri College of Engineering  
Chikkasandra, Kesaraghatta Road  
Bengaluru-560057



### Certification Course-Callus Culture Techniques

#### Post Event Report

Department of BT conducted Certificate Course on Callus culture techniques from 20<sup>th</sup> July 2015 to 25<sup>th</sup> July 2015


**Objective of the Course:** The one week course made the students to be familiar with the major concepts in plant tissue culture which is a main platform for their career. Certificate Course became the vital step to improve the knowledge of students.

**Guest Speaker:** Mr. Rohith Raj, Managing Partner, Chlorbios Pvt.Ltd. Yalahanka Bangalore

**Duration of the course:** One week from 20<sup>th</sup> July 2015 to 25<sup>th</sup> July 2015



Student participants in certification program

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road  
Bangalore-560057



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### Department of Biotechnology

Dates	Report
20-7-2015	Introduction to Callus culture and its application, Media used in callus production, Hands on preparation of different types of media for plant cell culture.
21-7-2015	Callus culture techniques, stages of callus culture, Physical appearance of callus, Development of aseptic callus culture, Hands on session inoculation of explants
22-7-2015	Introduction to organ culture, Types of organogenesis, Hands on session on growth measurement of callus culture, Sub culture of callus culture
23-7-2015	Plant regeneration, Histological study, Plant morphogenesis, Hands on session on adventitious shoot and root formation.
24-7-2015	Embryogenesis, Advantage of embryogenesis, Hands on session on checking Physio-chemical parameters affecting somatic embryogenesis
25-7-2015	Hairy root culture, Methodology of hairy root culture, Advantage of hairy root culture, Hands on session on Methodology of hairy root culture.

Conclusion: These programs prepare students to complete a specific task or allow them proficiency in one of the particular aspect such as callus culture techniques in field of Plant biotechnology. Students are able to learn about callus culture techniques. Certificate programs to help the students study to round out their education for their own personal fulfillment and interest for professional advancement or personal interest.

*Ananda S*  
Head of the Department  
HOD  
Dept. of Bio-Technology  
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No. 57/1, Chikkasandra  
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Principal  
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