

RV Educational Institutions[®]
RV College of Engineering[®]

Autonomous
Institution Affiliated
to Visvesvaraya
Technological
University, Belagavi

Approved by AICTE,
New Delhi

Department of Biotechnology

BOS INDEX SHEET

Sl. No.	Details	Date	Page No.
1	PG 2018 Scheme - 20 th BOS meeting	17-08- 2018	1-6
2	UG 2018 Scheme - 21 th BOS meeting	04-05-2019	7-13
3	UG 2018 Scheme - 22 nd BOS meeting	08-02-2020	14-22
4	NEP 2024 - 23 rd BOS meeting	15-12-2020	23-29
5	UG 2018 scheme - 24 th BOS meeting	04-06-2021	30-39
6	UG 2020 scheme - 25 th BOS meeting	12-03-2022	40 -49
7	UG 2021 scheme - 26 th BOS meeting	13-08-2022	50-55
8	UG 2022 scheme - 27 th BOS meeting	27-11-2022	56-61
9	UG 2022 scheme - 28 th BOS meeting	26-05-2023	62-75

Department of Biotechnology
Programme: B.E. (Biotechnology)

The following are the new courses added in the curricula in the respective curricular revisions made in 2018, 2021 and 2022 schemes. Curricular revisions were discussed thoroughly at the respective Board of Studies meetings. The new courses added are reflected in the revised curricula with the course codes.

Sl. No.	Title of the new course added	New course code	Scheme in which the new course is added
1.	Design Thinking lab	18BT47	2018
2.	Industrial Biotechnology	18BT5A3	2018
3.	Drug Delivery: Principles and Engineering	18BT5A4	2018
4.	Plant and Animal Biotechnology	18BT63	2018
5.	Minor Project	18BT64	2018
6.	Internet of Things	18BT6C1	2018
7.	Pharmaceutical Biotechnology	18BT6C2	2018
8.	Plant Utilities and Biosafety in India	18BT6C4	2018
9.	Medical Instrumentation	18BT6D1	2018
10.	Plant Design & Economics	18BT6D3	2018
11.	Fermentation Technology	18BT6D4	2018
12.	Fundamentals of Food Process Engineering	18BT5A1	2018
13.	Data structures and Algorithms using Java	18BT5A2	2018
14.	The Joy of Computing using Python	18OC5A5	2018
15.	Biomedical Instrumentation	18BT6D2	2018
16.	Internship	18BT74	2018
17.	Cell and Molecular Biology	21BT33	2021
18.	Bioprocess Calculations	21BT35	2021
19.	Biochemical Thermodynamics	21BT36	2021
20.	Computer Aided Drug Design	21BT4A1	2021
21.	Organ Printing	21BT4A2	2021



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Department of Biotechnology
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22.	Big data computing	21BT4A3	2021
23.	Cellular biophysics, its framework and quantitative biology	21BT4A4	2021
24.	Introduction to Mechanobiology	21BT4A5	2021

for **BoS-CHAIRMAN**
(BIOTECHNOLOGY)

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DEAN ACADEMICS

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R.V. College of Engineering
Bengaluru - 560 059

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BENGALURU - 560 059



Department of Biotechnology
Programme: M.Tech. (Bioinformatics)

1.	Applied Mathematics	18MAT11A	2018
2.	Statistical programming using R	18MBI12	2018
3.	Essentials of Computational Biology	18MBI13	2018
4.	Data Structures using Python	18MBI1A1	2018
5.	Genomics and Proteomics	18MBI1A2	2018
6.	Android Programming	18MBI2C2	2018
7.	Artificial Intelligence	18MBI2D2	2018
8.	Ruby and BioRuby	18MBI1B2	2018
9.	Gene Expression Data Analysis & Visualization	18MBI1B1	2018
10.	BioPerl and BioPython	18MBI21	2018
11.	Bio-molecular modeling and simulation	18MBI22	2018
12.	Research Methodology	18MBI23	2018
13.	Algorithm design and analysis	18MBI2C1	2018
14.	Android Programming	18MBI2C2	2018
15.	Java&J2EE	18MBI2D1	2018
16.	Advanced Data Science	18MBI3E1	2018
17.	Datamining and warehousing	18MBI3E2	2018
18.	Bigdata analytics and Applications	18MBI3E3	2018

Anwarun
BoS-CHAIRMAN
(BIOTECHNOLOGY)

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BENGALURU - 560 059



Department of Biotechnology
Programme: M.Tech. (Biotechnology)

1.	Shell Scripting (El)	18MBT1A3	2018
2.	Alternative farming (El)	18MBT1B2	2018
3.	System Biology	18MBT1B3	2018
4.	Crop improvement and molecular breeding	18MBT2C2	2018
5.	Insilico drug design	18MBT2C3	2018
6.	High Performance Computing	18MBT2D3	2018
7.	Next generation sequencing technology	18MBT3E3	2018
8.	Bioanalytical laboratory	22MBT14L	2022
9.	Enzyme Technology	22MBT1A2T	2022
10.	Principles of Bioprocess Engineering	22MBT1B2T	2022
11.	Industrial Biotechnology	22MBT1B4T	2022
12.	Biopython Lab	22MBT24L	2022
13.	3D Bioprinting	22MBT2C1T	2022
14.	Fermentation Technology	22MBT2C2T	2022
15.	Parenteral Formulation	22MBT2C3T	2022

Anwarajan
BoS-CHAIRMAN
for **(BIOTECHNOLOGY)**

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Invitation for BOS meeting

1 message

Pushpa Agrawal <pushpa_agrawal@rvce.edu.in>

Fri, Aug 10, 2018 at 3:53 PM

To: "K.P. Gopinathan" <kpg369@gmail.com>, Byregowda Sm <smbyregowda@gmail.com>, HOD Chemical Engineering <hod_ch@msrit.edu>, archna_71@yahoo.com, Pravina Koteshwar <pravina755@gmail.com>, Monisha Hajra <hajra.monisha@gmail.com>, vikrama n prabhu <vikrama87@gmail.com>, ushabiradar@gmail.com, pavanathomas@gmail.com
Cc: Neeta Shivakumar <neeta@rvce.edu.in>, Vidya N <vidya.n@rvce.edu.in>

Dear Sir / Madam,

The M.Tech. Biotechnology and M.Tech. Bioinformatics syllabus is for revision in 2018. The AICTE and VTU have proposed new credit scheme of 88 credits for the program (earlier 120 credits). In this regard your expert advice will help us in designing the opted curriculum. The department faculty have prepared the draft scheme, Kindly provide your suggestions. To finalize the scheme and discuss the detailed curriculum, the Board of Studies is scheduled in the Department of Biotechnology at 11.00 AM on 17-08-2018. You are requested to make it convenient to attend the meeting and provide your valuable inputs. The scheme is attached for your reference.

--
Thanking you with best regards

Dr. Pushpa Agrawal, FISBT, FICER
Professor & Head
Department of Biotechnology
R V College of Engineering
R V Vidyaniketan Post, Mysore Road,
Bangalore- 560 059
Phone: 080-6717 8096 (O), Mobile: +91 9448930618, 9901964641

 M.Tech 2018 scheme-r1.docx
25K

DEPARTMENT OF BIOTECHNOLOGY
R V COLLEGE OF ENGINEERING

Date: 10-08-2018

CIRCULAR

Sub: BOS meeting to finalize the scheme and discuss the detailed curriculum of M.Tech. Biotechnology and M.Tech. Bioinformatics 2018 scheme.

The M.Tech. Biotechnology and M.Tech. Bioinformatics syllabus is for revision in 2018. The AICTE and VTU have proposed new credit scheme of 88 credits for the program (earlier 120 credits). In this regard your expert advice will help us in designing the opted curriculum. The department faculty have prepared the draft scheme, Kindly provide your suggestions. To finalize the scheme and discuss the detailed curriculum, the Board of Studies is scheduled in the Department of Biotechnology at 11.00 AM on 17-08-2018. You are requested to make it convenient to attend the meeting and provide your valuable inputs. The scheme is attached for your reference.

BOS members

Dr. Pushpa Agrawal, Professor - Chairman

Dr. Vidya Niranjana, Professor and Head


Dr. Ashok Kumar H G, Professor and Head

Dr. Neeta Shivkumar, Associate Professor

Dr. Nagashree N. Rao, Associate Professor

Dr. Narayan A V, Associate Professor

Mr. Shivandappa, Assistant Professor


Dr. Pushpa Agrawal
Chairman
BOS in Biotechnology
10.8.18

Date: 17.08-2018

Minutes of Board of Studies meeting held on 17th August 2018, 11 am onwards.

The Board of Studies meeting to finalize scheme & syllabus for autonomous M.Tech. Biotechnology & M.Tech. Bioinformatics for 2018 scheme held on 17.08.2018, the following Board of studies member and special invitees were involved in the process and attended the meeting.

The chairman of Board of Studies welcomed the members and read and recorded the minutes of the meeting that was held on 17th March 2017.

The meeting started as per agenda

20.8.1 Discussion to finalize scheme & syllabus for autonomous M.Tech. Biotechnology & M.Tech. Bioinformatics for 2018 scheme.

The draft scheme and syllabus was prepared by the Departmental Implementation, Planning and Assessment committee (DIPAC) based on the scheme proposed by AICTE and Dean PG, RVCE. The Scheme was sent to BOS members and special invitees for their valuable suggestions. The further suggestions made by experts for the scheme and syllabus of M.Tech. Biotechnology & M.Tech. Bioinformatics on 17-08-2018 during meeting were incorporated, finalized and approved by BoS members to submit to Academic Council for final approval.

The following modifications and changes were suggested by the members:

- The scheme of M.Tech. Biotechnology found to be appropriate only some modifications were suggested which are included.
- The scheme of M.Tech. Bioinformatics found to be appropriate with some modifications were suggested which are included.
- The core courses were also approved except for "Genomic and proteomics and Biophyton" should be renamed as "Computational genomics and proteomics", for M.Tech. Biotechnology and for M.Tech. Bioinformatics the course "Genomics, proteomics and Biophyton" has to be changed to "Statistical programming using R".
- The list of electives had broad discussion:
 - The list of electives were divided into three modules: Health and Pharma, Food and Agriculture and Informatics related to Biotechnology was found to be appropriate for M.Tech. Biotechnology, except the alternative farming is included in place of Prebiotic, probiotic and nutraceuticals.
 - For M.Tech. Bioinformatics expert suggested a lot of Modification of various courses in the scheme. And the scheme is revamped totally. The Revised scheme by BoS is shown in Bold in following table.


	Option 1	Option 2	Option 3
Elective-1	Data Structures using Python	Genomics and proteomics	Unix and Shell Programming
Elective-2	Systems Biology	Ruby and BioRuby	Gene Expression Data Analysis and Visualization
Elective-3	Algorithm design and analysis	Theoretical biophysics and image processing,	Java & J2EE
Elective-4	Insilico Drug Design	Health Informatics	Web programming
Elective-5	Next Generation Sequencing Informatics		
Elective-6	Advanced Data Science	Data mining and warehousing	Big data analytics
Elective-7	Artificial Intelligence	High Performance Computing	Android Programming


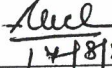
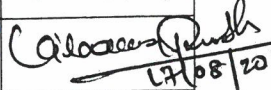
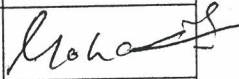
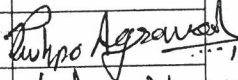
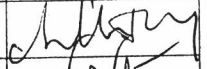
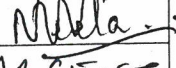

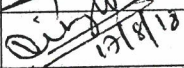
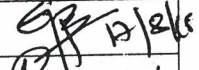
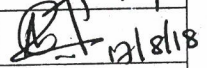
- The specialization in the students can be brought by restricting the selection of electives from same module.
- The members were of the opinion that open elective definition has been misinterpreted and clustering of departments for open elective is not appropriate. Putting boundaries for the open elective by clustering is highly inappropriate and needed to be addressed seriously.
- The open elective proposed by the department – “Nanomaterials, Nanocomposites and applications” was found to be appropriate and freed for M.Tech. Biotechnology and “Next Generation sequencing Informatics” for M.Tech. Bioinformatics.
- The audit courses were suggested by the college were approved as such.
- The Internship included in 3rd semester should be clearly indicated when and how it will be taken up.
- When students are going for internship in the industry how the dissertation phase I will be taken up.
- The dissertation is for 23 credits cannot be evaluated in only two phases. It should have been spread in four phases specifically the phase II alone is evaluated for 20 credits which is highly inappropriate.
- Based on the stake holders feedback the following is the list of new courses added for M.Tech Biotechnology.

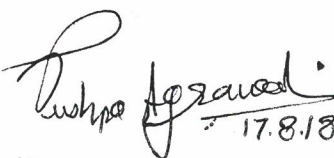
Sl. No.	Course Title	Course code
1	Shell Scripting (EI)	18MBT1A3
2	Alternative farming (EI)	18MBT1B2
3	System Biology	18MBT1B3
4	Crop improvement and molecular breeding	18MBT2C2
5	Insilico drug design	18MBT2C3
6	High Performance Computing	18MBT2D3
7	Next generation sequencing technology	18MBT3E3

- Based on the stake holders feedback the following is the list of new courses added for M.Tech Bioinformatics.

Sl. No.	Course Title	Course code
1	Applied Mathematics	18MAT11A
2	Statistical programming using R	18MBI12
3	Essentials of Computational Biology	18MBI13
4	Data Structures using Python	18MBI1A1
5	Genomics and Proteomics	18MBI1A2
6	Android Programming	18MBI2C2
7	Artificial Intelligence	18MBI2D2
8	Ruby and BioRuby	18MBI1B2
9	Gene Expression Data Analysis & Visualization	18MBI1B1
10	BioPerl and BioPython	18MBI21
11	Bio-molecular modeling and simulation	18MBI22
12	Research Methodology	18MBI23
13	Algorithm design and analysis	18MBI2C1
14	Android Programming	18MBI2C2
15	Java&J2EE	18MBI2D1
16	Advanced Data Science	18MBI3E1
17	Datamining and warehousing	18MBI3E2
18	Bigdata analytics and Applications	18MBI3E3


 Dr. Puspa Agrawal 17.8.18
 Chariman, BoS, Biotechnology

External members	
Dr. K. P. Gopinathan Emeritus Professor, IISc, Bengaluru	
Dr Archana Professor & HOD, Department of Chemical Engineering, MSRIT, Bengaluru	 14/8/2018
Dr. Pravina Koteswar Director, Syncorp operation, Bengaluru	ABSENT
Dr. S M Byregowda Director, Institute of Animal Health and Veterinary Biologicals, Bengaluru	ABSENT
Ms. Monisha Hajra Founder, Scientia Bio, Bengaluru	ABSENT
Mr. Vikram Prabhu (Rubicon Private Ltd) Senior Scientist, Biocon Research Limited (BRL), Biocon park, Bengaluru	 14/08/2018
Usha Biradar Molecular Connections, Bengaluru	ABSENT
Pavana Thomas St. Johns Medical Institute, Bengaluru	ABSENT
Dr. B S Mohan (Special Invitee) Novartis, Bengaluru Novo Nordisk	
Dr. Jayachandr N (Special Invitee) Monsanto, Bengaluru	Jay. 17/08/18
Internal Members	
Dr. Pushpa Agrawal, Professor - Chairman	 17.8.18
Dr. Vidya Niranjana, Professor & Head	Vidya Narayan
Dr. Ashok Kumar H G, Professor	
Dr. Neeta Shivkumar, Associate Professor	
Dr. Nagashree N. Rao, Associate Professor	ABSENT
Dr. Narayan A V, Associate Professor	ABSENT
Mr. S.K. Shivandappa, Assistant Professor	
Dr. Vinay Hegde, Associate Professor, Dept. of CSE (Special Invitee)	 13/8/18
Mr. Girish Rao Salanke N S, Assistant Professor, Dept. of CSE (Special Invitee)	 13/8/18
Dr. A H Manjunatha Reddy, Associate Professor (Special Invitee)	 13/8/18
Dr. G Vijaya Kumar, Associate Professor (Special Invitee)	-


17.8.18
Head of the Department
Dept. of Bio-Technology
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DEPARTMENT OF BIOTECHNOLOGY
R V COLLEGE OF ENGINEERING

Date: 23-04-2019

CIRCULAR

Sub: BOS meeting to finalize 2018 scheme and syllabus for B.E. Biotechnology.

To finalize 2018 scheme and syllabus for B.E. Biotechnology your expert advice will help us in designing the opted curriculum. The Board of Studies is scheduled in the Department of Biotechnology on 04-05-2019 at 10.00 AM. You are requested to make it convenient to attend the meeting and provide your valuable inputs.

BOS members

Dr. Vidya Niranjana, Professor and Head

Dr. H G Ashok Kumar, Professor *Ashok Kumar*

Dr. A V Narayan, Associate Professor *A. Narayan*

Dr. Neeta Shivakumar, Associate Professor *Neeta*

Dr. Nagashree N. Rao, Associate Professor *Nagashree N. Rao* 23/4/19

Dr. G. Vijaya Kumar, Associate Professor *G. Vijaya Kumar*

Dr. Trilokchandran B, Assistant Professor *Trilokchandran B*

Mr. S.K. Shivandappa, Assistant Professor *S.K. Shivandappa*

Vidya Niranjana
Dr. Vidya Niranjana
Chairman
BOS in Biotechnology



BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Invitation of BoS meeting @ Dept. of Biotechnology RVCE

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Tue, Apr 23, 2019 at 3:22 PM

To: savithri.bt@bmsce.ac.in, bsgowri@sit.ac.in, Jayachandra N <itsjay510@gmail.com>, jitendraitbt@gmail.com

Dear Sir / Madam

To finalize 2018 scheme and syllabus for B.E. Biotechnology your expert advice will help us in designing the opted curriculum. The Board of Studies is scheduled in the Department of Biotechnology on 04-05-2019 at 10.00 AM. You are requested to make it convenient to attend the meeting and provide your valuable inputs and approval of the same.

--
Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178095

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23-04-2019, 03:23 PM



Date: 04-05-2019

ACTION TAKEN REPORT FOR PG 2018 SCHEME- 20TH BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	To finalize scheme and Syllabus for autonomous M.tech Biotechnology and M.tech Bioinformatics for 2018 scheme	Genomics and Proteomics & Biophyton should be renamed as Computational Genomics and Proteomics	The course was renamed as Computational Genomics and Proteomics
2		List of electives were found to appropriate except for Prebiotic, Probiotic and neutraceuticals.	Alternate farming was introduced instead of Prebiotic, Probiotic and neutraceuticals.
3		The dissertation for 23 credits cannot be evaluated in only two phases but should be spread in 4 phases	The decision of two phases of evaluation was taken at the college level

Vidya Narayan

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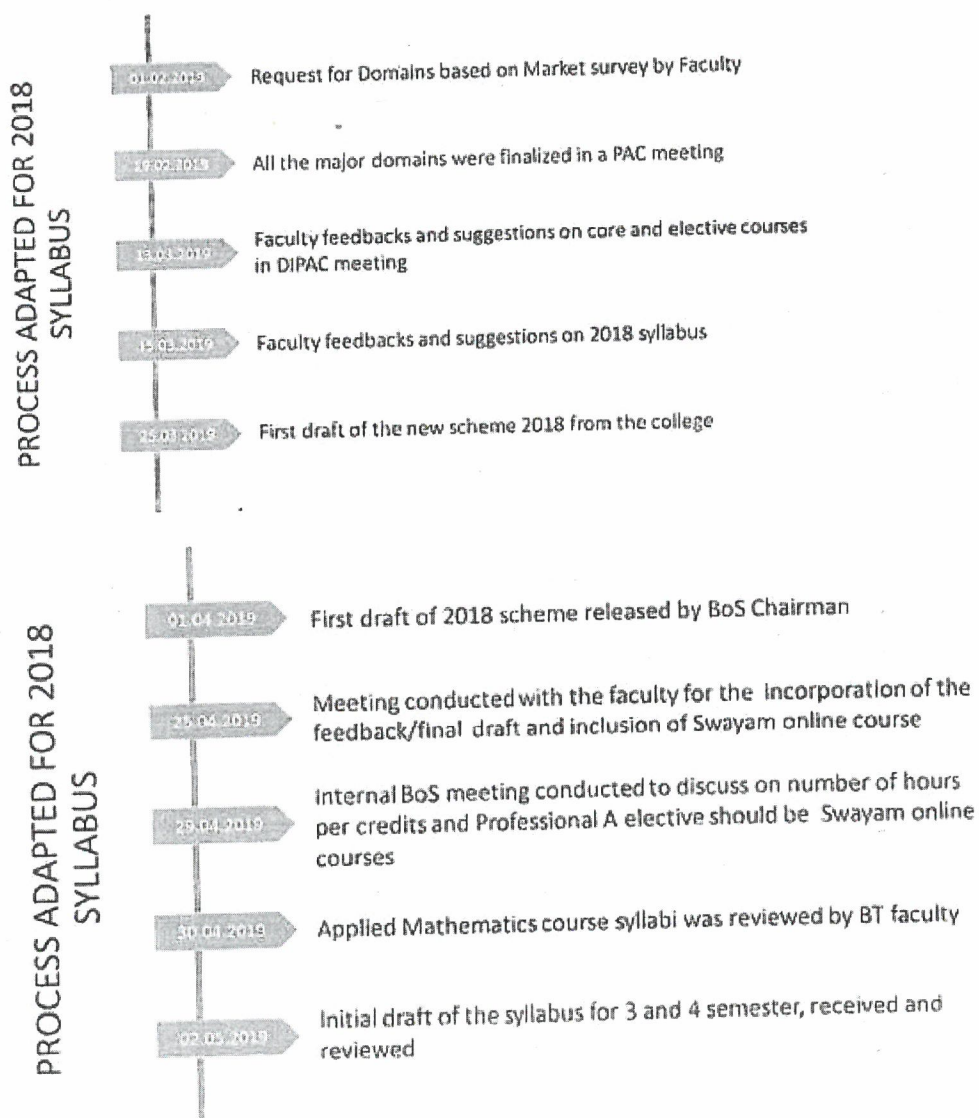
Minutes of Board of Studies meeting held on 04 May 2019, 10 am onwards.

The Board of Studies (BoS) meeting was scheduled on 04-05-2019 to **finalize 2018 scheme for B.E. Biotechnology and Syllabus for III & IV Semester.** The Board of studies member and special invitees were involved in the process.

The chairman of BoS welcomed the members and presented on the protocol for framing the scheme and syllabus for third and fourth semester of 2018 scheme. Maximum of 20% change was updated in the syllabus. The meeting started as per the following agenda for the suggestions from the members.

- 19.5.1 **To finalize 2018 scheme for B.E. Biotechnology**
19.5.2 **To finalize syllabus for III & IV Semester of 2018 Scheme.**

Protocol adapted for framing the syllabus



The following modifications and changes were suggested by the members:

- 1) **Dr. Savithri Bhat** suggested following changes.
 - a) Inclusion of clusters for Biology for Engineers depending on the branches.
 - b) Microbial, Plant and Animal biotechnology courses need to be replaced with Bioprocess Technology
 - c) Chemical Engineering courses must be enhanced (2 courses in each semester)
 - d) Design thinking should be made as an audit course.
 - e) Experiments related to plant transformation should be moved to Genetic Engg course.
- 2) **Dr. Gowrishankar** suggested following changes.
 - a) Syllabus of the course “Biology for Engineers” should be in-line with IIT Bombay syllabus.
 - b) The course “Unit Operations” deals with basic Engineering concepts hence must be offered in early semesters (III/IV) as against V Sem.
 - c) The course “Biological Thermodynamics” must be offered as a separate course for Biotechnology students under biotechnology board.
 - d) Diffusion content should be included in unit operations in place of size reduction
- 3) **Dr. Nagendra** suggested the following
 - a) The nomenclature of course Microbiology and Immunology should be changed to “Concepts in Biotechnology” with the inclusion of all Basic concepts.
 - b) In the course “Biophysics and Instrumentation” error analysis needs to be included.
 - c) The course Biostatistics should have inclusion of the topic “Design of experiments”.
 - d) Contents on Docking, Ligand preparation and drug lead needs to be added in Bioinformatics course.
 - e) Course on Metabolites and bioprospecting to be offered as an elective.
 - f) The content Disorders to be added in Molecular biology course.
- 4) **Mr. Jayachandra** suggested the following
 - a) Genome Analytics should be introduced.
 - b) Add basics of sequence analysis in BCA.
 - c) Clustering and random forest needs to be added in Biostatistics course.
 - d) Microbial, Plant and Animal biotechnology courses need to be replaced with Bioprocess Technology.
- 5) **Dr. Jithendra Kumar** suggested the following.
 - a) Course IPR can be renamed as “Technology entrepreneurship and commercialization”.
 - b) Synthetic Biology to replace Forensic sciences.
 - c) Design thinking should have 1 + 1 credit.
- 6) **Dr. B. S. Yugandhar Reddy** suggested the following.
 - a) Genetics circuits can be offered as a core course.
 - b) Microbiome and Metagenomics content must be included in course NGS informatics.
 - c) Nano pore content to be included in course Bioinformatics.

The suggestions made by experts for the scheme and syllabus of B.E. Biotechnology on 04 May 2019 during meeting were discussed, incorporated, finalized and approved by BoS members to submit to Academic Council for final approval.

Based on the stakeholders feedback the following is the list of new courses were added for B.E III and IV Semester Biotechnology 2018 Scheme.

Sl. No.	Course Title	Course Code
1	Concepts in Biotechnology	18BT33
2	Design Thinking lab	18BT47

Vidya Niranjana.

Dr. Vidya Niranjana

Chairperson, BoS, Biotechnology

**RV COLLEGE OF ENGINEERING®****DEPARTMENT OF BIOTECHNOLOGY**

(Autonomous Institution affiliated to Visvesvaraya Technological University, Belagavi)

Approved by All India Council for Technical Education, New Delhi.

Date: 04-05-2019

The Board of Studies meeting to finalize 2018 scheme and III & IV semester syllabus for B.E. Biotechnology held on 04-05-2019, the following Board of studies member and special invitees were involved in the process and attended the meeting. The agenda for the meeting is as follows:

19.5.1 To finalize 2018 scheme for B.E. Biotechnology

19.5.2 To finalize syllabus for III & IV Semester of 2018 scheme.

External members	
Dr. Savithri Bhat Associate Professor & Head, Department of Biotechnology, B.M.S. College of Engineering, Bangalore - 560 019	
Dr B S Gowrishankar Professor and Head, Department of Biotechnology, SIT, Tumkur	
Dr. Jitendra Kumar Managing Director, Bangalore Bioinnovation Centre (BBC), (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore	
Mr. Jayachandra N Data Analyst, Bayer, Bengaluru	
Dr. H G Nagendra (External Special Invitee) Professor & H.O.D, Sir MVIT, Bengaluru	
Dr. B. S. Yugandhar Reddy's (External Special Invitee) Research Scientist at Hindustan Unilever Limited	
Internal Members	
Dr. Vidya Niranjana, Chairperson	
Dr. H G Ashok Kumar, Professor	
Dr. A V Narayan, Associate Professor	
Dr. Neeta Shivakumar, Associate Professor	
Dr. Nagashree N. Rao, Associate Professor	
Dr. G. Vijaya Kumar, Associate Professor	
Dr. Trilokchandran B, Assistant Professor	
Mr. S.K. Shivandappa, Assistant Professor	
Dr. Vinod Kallur, HOD, Dept. of Chemical Engg., RVCE	
Dr. Shridevi K, HOD, Dept. of Mathematics, RVCE	

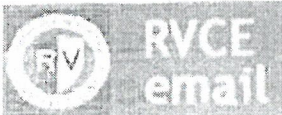
Dr. Vidya Niranjana
Chairperson, BoS, Biotechnology
Head of the Department
Dept. of Bio-Technology
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RV Vidyaniketan Post, Mysuru Road, Bengaluru - 560 059. Karnataka, INDIA.

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BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Invitation for BoS meeting @ Dept. of Biotechnology, RVCE

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Mon, Feb 3, 2020 at 10:36 AM

To: savithri.bt@bmsce.ac.in, "bsgowri@sit.ac.in bsgowri@sit.ac.in" <bsgowri@sit.ac.in>,
babylakshmi@ibioinformatics.org, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>


Dear Sir / Madam,

To finalize 2018 scheme and syllabus V and VI Semester B.E. Biotechnology syllabus which is due for revision in 2020. Your expertise review will help us in designing the opted curriculum. The Board of Studies is scheduled in the Department of Biotechnology on 08-02-2020 at 11.00 AM. You are requested to make it convenient to attend the meeting and provide your valuable inputs.

Kindly find attached the scheme. The draft syllabus is undergoing review internally and will be sent by Wednesday.

-- Vidya Niranjana
5/2/2020

Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178048

 scheme 2018 V VI BE Biotechnology.docx
18K

03-02-2020, 10:34

14

RV COLLEGE OF ENGINEERING®

(Autonomous Institution Affiliated to VTU, Belagavi)

BIOTECHNOLOGY ENGINEERING

FIFTH SEMESTER CREDIT SCHEME

Sl. No	Course Code	Course Title	BOS	Credit Allocation			Total Credits
				L	T	P	
1	18HSI51/61	IPR & Entrepreneurship***	HSS	3	0	0	3
2	18BT52	Biophysics and Instrumentation	BT	3	0	1	4
3	18BT53	Genetic Engineering and Applications	BT	3	0	1	4
4	18CH54	Process Dynamics and control	CH	3	0	1	4
5	18BT55	Reaction Engineering	BT	3	0	0	3
6	18BT5AX	Elective A (PE)	BT	3	0	0	3
7	18G5BXX	Elective B (OE)*	Respective BOS	3	0	0	3
8	18IN56	Internship	BT	0	0	2	2
Total Number of Credits							26
Total number of Hours/Week				21	0	6+2	

*Students should take other department Global Elective courses

Note: Internship evaluation to be conducted during 5th semester and will have credits

**Elective A: MOOC COURSES (12week course)

Programs	Semester	Course Code/ Course Title	Semester	Course Code / Course Title
EC,CS.EE.IS,TE	5	18HSI51 IPR& Entrepreneurship	6	18HEM61
ME,CH,IM,ELCV,BT,AS	5	18HEM51 Foundations of Management & Economics	6	18HSI61

Professional Elective: Group A (Online courses)		Open Elective: Group B
1.	Computer Aided Drug Design	
2.	Fundamental of Food process Engineering	
3.	Bioreactor	
4.	Data Science for engineers	

Global Elective offered by the program: Nanotechnology (18G5BXX)

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BIOTECHNOLOGY ENGINEERING

SIXTH SEMESTER CREDIT SCHEME

Sl. No.	Course Code	Course Title	BOS	Credit Allocation			Total Credits
				L	T	P	
1.	18HEM51/61	Foundations of Management and Economics***	HSS	2	0	0	2
2.	18BT62	Microbial Biotechnology	BT	4	0	1	5
3.	18BT63	Plant and Animal Biotechnology	BT	3	1	1	5
4.	18BT64	Minor Project**	BT	0	0	2	2
5.	18BT6CX	Elective C (PE)	BT	3	0	0	3
6.	18BT6DX	Elective D (PE)	BT	3	0	0	3
7.	18G6EXX	Elective E (OE)*	Respective BOS	3	0	0	3
8.	18HSE68	Professional Practice-II (Employability Skills and Professional Development of Engineers)	HSS	0	0	1	1
Total Number of Credits							24
Total number of Hours/Week				18	2	8+2	

*Students should take other department Global Elective courses

** Non-Contact Hours.

Programs	Semester	Course Code/ Course Title	Semester	Course Code / Course Title
EC.CS.EE.IS.TE	5	18HSI61 IPR& Entrepreneurship	6	18HEM61
ME.CH.IM.EI.CV.BT.AS	5	18HEM61 Foundations of Management & Economics	6	18HSI61

Professional Elective: Group C			Professional Elective: Group D		
Sl. No.	Course Code	Course Title	Sl. No.	Course Code	Course Title
1.	18BT6C1	Pharmaceutical Biotechnology	1.	18BT6D1	Biomedical Instrumentation
2.	18BT6C2	Agriculture Biotechnology	2.	18BT6D2	Food & Dairy Biotechnology
3.	18BT6C3	Plant utilities and Biosafety in India	3.	18BT6D3	Fermentation Technology
4.	18BT6C4	Java and J2EE	4.	18BT6D4	Systems Biology

Global Elective offered by the program: Bioinspired Engineering (18G6EXX)

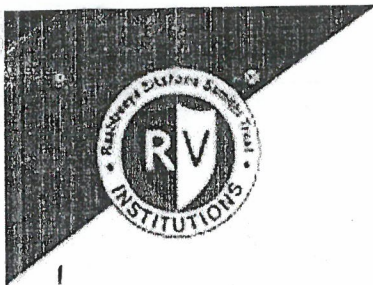


08-02-2020

ACTION TAKEN REPORT FOR UG 2018 SCHEME- 21TH BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	<ul style="list-style-type: none">To finalize 2018 schemeTo finalize Syllabus for UG Biotechnology (III & IV Semester) for 2018 scheme	Microbiology and Immunology should be changed to Concepts in Biotechnology	The nomenclature was changed to Concepts in Biotechnology
2		Unit Operations need to be introduced to students in 3 rd or 4 th sem not in the higher semesters	Unit Operations was shifted to 3 rd & 4 th semester
3		Other suggestions of the BoS members were recorded but not implemented	On the basis of the discussions made by Internal BoS members with the chairperson the suggestions were not incorporated

Vidya Narayan.



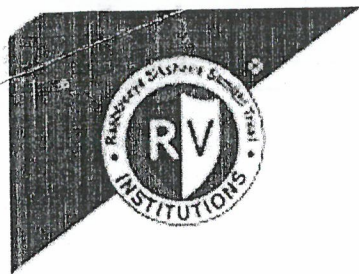
Discussions regarding Board of Studies

Minutes of meeting held on Saturday, 08th February 2020

Agenda	Finalization of 2018 scheme & syllabus for V and VI Semester B.E. Biotechnology
Date	Saturday, 08 th February 2020
Time	11.00am
Venue	HOD ROOM, RVCE

Members Present:

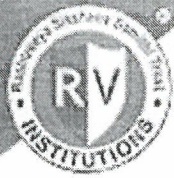
#	Name of the faculty	Designation	Dept.	Signature
1.	Dr. Savithri Bhat	Associate Professor & Head, B.M.S. College of Engineering,	Department of Biotechnology,	
2.	Dr B S Gowrishankar	Professor and Head, Department of Biotechnology, SIT, Tumkur	Department of Biotechnology	
3.	Dr. Jitendra Kumar	Managing Director, Bangalore Bioinnovation Centre (BBC), (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore	Bangalore Bioinnovation Centre (BBC), (KBITS)	ABSENT
4.	Mr. Jayachandra N	Data Analyst, Bayer, Bengaluru	Data Analyst	
5.	Dr. B. S. Yugandhar Reddy (External Special Invitee)	Research Scientist Hindustan Unilever Limited	Research	
6.	Dr. K Sumangala Bhat (External Special Invitee)	Dextrose Technologies	Executive Director	
7.	Dr. Vidya Niranjana Chairperson	Professor and Head	Department of Biotechnology	
8.	Dr. H G Ashok Kumar	Professor	Department of Biotechnology	
9.	Dr. A V Narayan	Associate Professor	Department of Biotechnology	
10.	Dr. Neeta Shivakumar	Associate Professor	Department of Biotechnology	
11.	Dr. Nagashree N. Rao	Associate Professor	Department of Biotechnology	



12.	Dr. G. Vijaya Kumar	Associate Professor	Department of Biotechnology	<i>[Signature]</i> 8/2/20
13.	Dr. Trilokchandran B	Assistant Professor	Department of Biotechnology	B. L. 8/2/2020
14.	Dr. Shivandappa	Assistant Professor	Department of Biotechnology	<i>[Signature]</i>
15.	Dr. Vinod Kallur	Professor and Head	Dept. of Chemical Engg., RVCE	ABSENT

Enclosed: Meeting minutes

Vidya Naranjan
8/2/2020
Head of the Department
Dept. of Bio-Technology
R.V. College of Engineering
BANGALORE - 560 059



Date: 08-02-2020

The Dr. Vidya Niranjana Chairman of Board of Studies welcomed the members and presented 2018 scheme & syllabus for V and VI Semester B.E. Biotechnology which is due for revision in 2020

The following points were discussed:

Agenda #	Discussions and Resolutions
22.1	2018 scheme & syllabus for V and VI Semester B.E. Biotechnology

Mr. Jayachandra N suggested for

1. **Data science for Engineers** to have more on introduction of data science and machine learning and suggested couple of reference books
2. **Java & J2EE** recommended for few more topics under **NGS analysis** for quality check and variant calling

Resolution: Suggestion would be included

Dr. Savithri Bhat suggested for:

1. **Nanotechnology** should be offered separately, so need not be included in Biophysics
2. III unit is repetitive and hence need to be replaced with the Biopesticide and Biofertilizers in Agriculture Biotechnology.

Resolution: III unit is repetitive and hence need to be replaced with the Biopesticide and Biofertilizers

Dr. K Sumangala Bhat suggested for:

1. Nucleic acid and protein (Unit I & II) in **Biophysics & instrumentation** sees repetition as it is studied in Biochemistry
2. Plant Protection should be given weightage in **Agricultural Biotechnology**
3. Post-Harvest preservation to be included in **Food and Dairy BT**

Resolution: Post Harvest preservation to be included in Food and Dairy BT



Dr B S Gowrishankar suggested for

1. Shift Unit 5 of reaction engg. To microbial BT or fermentation Technology
2. Include regulatory affairs of Pharma BT
3. Power calculations should be included in Fermentation tech
4. Numericals must be included in all units of Process dynamics & Control
5. The first 2 units of Plant utilities and Biosafety in India. one unit must be included on Biosafety in Industries, Bio policy on safety, Govt rules & regulations
6. If it is open book system, equations & numericals can be included in Nanotechnology

Resolution: Include regulatory affairs of Pharma BT,

1. Numericals must be included in all units of Process dynamics & Control
2. The first 2 units of Plant utilities and Biosafety in India. one unit must be included on Biosafety in Industries, Bio policy on safety, Govt rules & regulations

Dr. B. S. Yugandhar Reddy suggested for:

➤ **In Genetic Engg.**

1. Restriction digestion: use different enzymes
2. For DNA isolation use different strains (gram + & gram -ve)
3. For PCR exp. Do primer design
4. Microarray should be included in hybridization in theory
5. DNA/ RNA foot printing
6. Include all hybrid systems – co-immune ppt, cell free protein translation

Resolution: Restriction digestion: use different enzymes

Internal BoS :

1. **Dr. Vijaya Kumar :** Applications of compressed Air and the concepts of scheme purging & N purging operations can be included in plant utilities and safety
2. **Dr. Neeta Shivakumar :** Separate course on nanotechnology should be included for Biotech students as a core subject



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Based on the stakeholders feedback the following is the list of new courses were added for 2018 scheme V and VI Semester B.E. Biotechnology

Sl. No.	Course Title	Course Code
1	Industrial Biotechnology	18BT5A3
2	Drug Delivery: Principles and Engineering	18BT5A4
3	Plant and Animal Biotechnology	18BT63
4	Minor Project	18BT64
5	Internet of Things	18BT6C1
6	Pharmaceutical Biotechnology	18BT6C2
7	Plant Utilities and Biosafety in India	18BT6C4
8	Medical Instrumentation	18BT6D1
9	Plant Design & Economics	18BT6D3
10	Fermentation Technology	18BT6D4
11	Fundamentals of Food Process Engineering	18BT5A1
12	Data structures and Algorithms using Java	18BT5A2
13	The Joy of Computing using Python	18OC5A5
14	Biomedical Instrumentation	18BT6D2

Meeting concluded with thanks to the chair

Vidya Niranjana

Dr. Vidya Niranjana
Chairman - Board of Studies
Department of Biotechnology

Date: 19-03-2020

The Dr. Vidya Niranjana Chairman of Board of Studies discussed about Scheme Syllabus of 5th and 6th Semester.

Invitation for Board of Studies meeting Biotechnology department RVCE

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Mon, Dec 14, 2020 at 1:18 PM

To: savithri.bt@bmsce.ac.in, "bsgowri@sit.ac.in bsgowri@sit.ac.in" <bsgowri@sit.ac.in>,
babylakshmi@ibioinformatics.org, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>

Dear Sir / Madam,

The Board of Studies meeting is scheduled on 15-12-2020 at 10 PM online using the link (mail also sent) in Department of Biotechnology, R V College of Engineering.

Join from the meeting link

[https://rvce.webex.com/rvce/j.
php?MTID=
mc680cc2b01e8ae12c688d2b74c2ec
9d2](https://rvce.webex.com/rvce/j.php?MTID=mc680cc2b01e8ae12c688d2b74c2ec9d2)

Meeting number (access code): 158 561 3922

Meeting
password:
123456

Agenda:

- 1) **Implementation of NEP 2020**
- 2) Odd semester result analysis.

Your input is highly valuable to design the curriculum. You are requested to make it convenient to attend the meeting and provide your valuable inputs.

--
Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178048



Webex meeting invitation: BoS meeting Dept. of Biotechnology, RVCE

ahmanjunatha ahmanjunatha <messenger@webex.com>
Reply-To: ahmanjunatha@rvce.edu.in
To: hod.bt@rvce.edu.in

Mon, Dec 14, 2020 at 1:10 PM

Hi, hod.bt@rvce.edu.in,

ahmanjunatha ahmanjunatha invites you to join this Webex meeting.

BoS meeting Dept. of Biotechnology, RVCE

Tuesday, December 15, 2020

10:00 am | (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi | 2 hrs

Meeting number (access code): 158 561 3922

Meeting password: 123456

Join meeting

More ways to join:

Join from the meeting link

<https://rvce.webex.com/rvce/j.php?MTID=mc680cc2b01e8ae12c688d2b74c2ec9d2>

Join from a video system or application

Dial 1585613922@rvce.webex.com

You can also dial 210.4.202.4 and enter your meeting number.

Join by phone

Use VoIP only

Can't join the meeting?

IMPORTANT NOTICE: Please note that this Webex service allows audio and other information sent during the session to be recorded, which may be discoverable in a legal matter. By joining this session, you automatically consent to such recordings. If you do not consent to being recorded, discuss your concerns with the host or do not join the session.

2 attachments

24
14-12-2020, 13:



BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Webex meeting invitation: BoS meeting Dept. of Biotechnology, RVCE

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Mon, Dec 14, 2020 at 1:19 PM

To: savithri.bt@bmsce.ac.in, "bsgowri@sit.ac.in" <bsgowri@sit.ac.in>,
babylakshmi@ibioinformatics.org, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>

(Quoted text hidden)

Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178048

2 attachments

 invite.ics
4K

 Webex_Meeting.ics
4K

Webex recording is available for viewing: BoS meeting Dept. of Biotechnology, RVCE-20201215 0428-1

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Tue, Dec 15, 2020 at 3:01 PM

To: savithri.bt@bmsce.ac.in, "bsgowri@sit.ac.in" <bsgowri@sit.ac.in>, babyalakshmi@ibioinformatics.org, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>, bt_faculty <bt_faculty@rvce.edu.in>

Dear Sir / Madam

kindly find the BOS meeting recording held on 15 Dec 2020 as per the discussion held. This is for your kind information.

----- Forwarded message -----

From: 'ahmanjunatha ahmanjunatha' via Biotechnology Faculty <bt_faculty@rvce.edu.in>

Date: Tue, Dec 15, 2020 at 2:20 PM

Subject: Webex recording is available for viewing: BoS meeting Dept. of Biotechnology, RVCE-20201215 0428-1

To: <bt_faculty@rvce.edu.in>

Hello,

ahmanjunatha ahmanjunatha wants to share this Webex recording with you.

Message from ahmanjunatha ahmanjunatha: I'd like to share the meeting recording with you.

BoS meeting Dept. of Biotechnology, RVCE-20201215 0428-1

Tuesday, December 15, 2020

12:48 pm | (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

Play recording (2 hrs 17 mins)

Recording password: 6jZg4YAm

--
Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178048

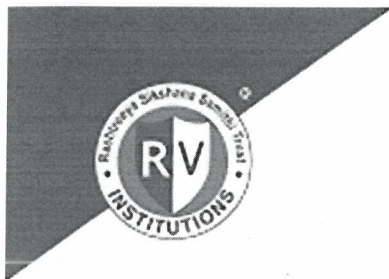


15-12-2020

ACTION TAKEN REPORT FOR UG 2018 SCHEME- 22nd BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	To finalize Syllabus for UG Biotechnology (V & VI Semester) for 2018 scheme	III unit in Agriculture Biotechnology to be replaced with Biopesticides and Biofertilizers	III unit on Biopesticides and Biofertilizers was added
2		Numericals must be added in all units of Process dynamics and control	Numericals were added
		Microarray to be included in hybridization	Was included
3		Other suggestions of the BoS members were recorded but not implemented	On the basis of the discussions made by Internal BoS members with the chairperson the suggestions were not incorporated

Vidya Nayan



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Department of Biotechnology

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by NAAC, Bengaluru

Date: 15-12-2020

The Dr. Vidya Nirnanjan Chairman of Board of Studies welcomed the members and the following points were discussed:

Agenda #	Discussions and Resolutions
23.1	Implementation of NEP 2020

Mr. Jayachandra N suggested for

- 1) Enquired about the criteria involved in selecting the online courses.
- 2) More number of the global and professional electives need to be offered.

Resolution:

- 1) Through NPTEL and MOOC courses the online classes were selected.

Dr. Savithri Bhat suggested for:

- 1) Appraised the NEP concept on curricular and co-curricular coverage including sports and happy hour.

Resolution:

To be included in the design of the new curriculum according to NEP policy.

Internal BoS :

1. **Dr. Vijaya Kumar** suggested to train the internal faculty through FDP programs for enriching the knowledge required for the syllabus through NEP.
2. **Dr. Sumathra M** presented the NEP policy and measure taken to amend the same in the curriculum. She also suggested to give freedom to the faculty to attend the classes in other departments to enhance their skills and knowledge.

Agenda #	Discussions and Resolutions
23.2	Odd semester result analysis.

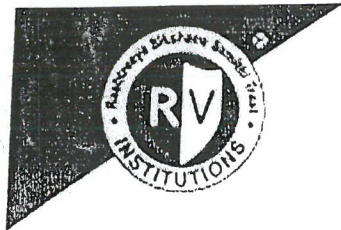
Internal BoS :

Dr. Narendra Kumar S Presented the odd semester Result analysis

Based on the stakeholders feedback the NPTEL and MOOC courses were to be added for B.E. Biotechnology

Meeting concluded with thanks to the chair

Vidya Nirnanjan
Dr. Vidya Nirnanjan
Chairman - Board of Studies
Department of Biotechnology



Discussions regarding Board of Studies

Minutes of meeting held on Tuesday, 15th December 2020

Agenda	1) Implementation of NEP 2020 2) Odd semester result analysis.
Date	Tuesday, 15 th December 2020
Time	10.00 AM
Venue	Online

Members Present:

#	Name of the faculty	Designation	Dept.	Signature
1.	Dr. Savithri Bhat	Professor, Department of Biotechnology, B.M.S. College of Engineering	Department of Biotechnology,	ONLINE
2.	Dr B S Gowrishankar	Professor and Head, Department of Biotechnology, SIT, Tumkur	Department of Biotechnology	ONLINE
3.	Dr. Babylakshmi Muthusamy	Institute of Bioinformatics	Research Scientist	ONLINE
4.	Dr. Jitendra Kumar	Managing Director, Bangalore Bioinnovation Centre (BBC), (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore	Bangalore Bioinnovation Centre (BBC), (KBITS)	ONLINE
5.	Mr. Jayachandra N	Data Analyst, Bayer, Bengaluru	Data Analyst	ONLINE
6.	Dr. Vidya Niranjana Chairperson	Professor and Head	Department of Biotechnology	ONLINE
7.	Dr. H G Ashok Kumar	Professor	Department of Biotechnology	ONLINE
8.	Dr. A V Narayan	Associate Professor	Department of Biotechnology	ONLINE
9.	Dr. Neeta Shivakumar	Associate Professor	Department of Biotechnology	ONLINE
10.	Dr. Nagashree N. Rao	Associate Professor	Department of Biotechnology	ONLINE
11.	Dr. G. Vijaya Kumar	Associate Professor	Department of Biotechnology	ONLINE
12.	Dr. Trilokchandran B	Assistant Professor	Department of Biotechnology	ONLINE
13.	Dr. Shivandappa	Assistant Professor	Department of Biotechnology	ONLINE
14.	Dr. Sumathra M	Assistant Professor (Invited)	Department of Biotechnology	ONLINE
15.	Dr. Narendra Kumar S	Assistant Professor (Invited)	Department of Biotechnology	ONLINE

Enclosed: Meeting minutes

Invitation for Board of Studies meeting Biotechnology department RVCE

3 messages

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Wed, Jun 2, 2021 at 4:14 PM

To: savithri.bt@bmsce.ac.in, "bsgowri@sit.ac.in bsgowri@sit.ac.in" <bsgowri@sit.ac.in>, babylakshmi@ibioinformatics.org, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>
Cc: Vidya N <vidya.n@rvce.edu.in>

Dear Sir / Madam,

The Board of Studies meeting is scheduled on 04-06-2021 at 6.00 PM in the Department of Biotechnology, R V College of Engineering through online.

Agenda:

- 1) To Finalize 7th and 8th Sem. Syllabus 2018 Scheme.

The Syllabus of 7th and 8th Sem. 2018 Scheme and meeting link will be shared shortly.

Your input is highly valuable to design the curriculum. You are requested to make it convenient to attend the meeting and provide your valuable inputs.

--

Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178048

Babylakshmi Muthusamy <babylakshmi@ibioinformatics.org>

Wed, Jun 2, 2021 at 6:25 PM

To: BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Cc: savithri.bt@bmsce.ac.in, "bsgowri@sit.ac.in bsgowri@sit.ac.in" <bsgowri@sit.ac.in>, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>, Vidya N <vidya.n@rvce.edu.in>

Dear Dr. Niranjana,

Thank you for the invite. I confirm that I will attend the meeting on the scheduled date and time.

thanks,
Babylakshmi
[Quoted text hidden]

--

Babylakshmi Muthusamy, Ph. D.
DBT-BioCARE Scientist
Research Scientist
Institute of Bioinformatics
International Tech Park
Bangalore - 560066
Phone: +919481811694

bsgowri@sit.ac.in bsgowri@sit.ac.in <bsgowri@sit.ac.in>

Wed, Jun 2, 2021 at 10:11 PM

Invitation for BoS meeting Dept. of Biotechnology, RVCE

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Thu, Jun 3, 2021 at 4:22 PM

To: Dean Academics R V College of Engineering <dean.academics@rvce.edu.in>

Cc: Vidya N <vidya.n@rvce.edu.in>

Dear Sir,

The Department of Biotechnology invites yourself to attend the BoS meeting scheduled tomorrow Friday 04 June 2021 at 6 PM to finalize 7 and 8 sem., 2018 Scheme. BE Biotechnology syllabus. The Meeting link and syllabus is also sent. Kindly join the meeting for your valuable inputs.

Thanking you

----- Forwarded message -----

From: **BIOTECHNOLOGY RVCE** <hod.bt@rvce.edu.in>

Date: Thu, Jun 3, 2021 at 4:12 PM

Subject: Syllabus and Webex meeting invitation: BoS Meeting, Dept. of Biotechnology, RVCE

To: <savithri.bt@bmsce.ac.in>, bsgowri@sit.ac.in bsgowri@sit.ac.in <bsgowri@sit.ac.in>,
<babylakshmi@ibioinformatics.org>, <jitendraitbt@gmail.com>, Jayachandra N <itsjay510@gmail.com>

Cc: Vidya N <vidya.n@rvce.edu.in>

Dear Sir / Madam

Kindly find the syllabus and online meeting Webex link for Bos meeting scheduled in Dept. of Biotechnology, R V College of Engineering tomorrow Friday 04 June 2021 at 6 PM. to finalize 7 and 8 Sem, 2018 Syllabus for BE Biotechnology. This is for your kind information.

Thanking you

ahmanjunatha ahmanjunatha is inviting you to a scheduled Webex meeting.

Friday, June 4, 2021

6:00 PM | (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi | 3 hrs

Join meeting**More ways to join:****Join from the meeting link**<https://rvce.webex.com/rvce/j.php?MTID=m97c4ce7f577742053d650ee828e6cfbd>**Join by meeting number**

Meeting number (access code): 158 311 6200

Meeting password: 123456

Join by phone

Use VoIP only

Join from a video system or application

Dial 1583116200@rvce.webex.com

You can also dial 210.4.202.4 and enter your meeting number.

Need help? Go to <https://help.webex.com>

Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178048

3 attachments

 **invite.ics**
7K

 **Webex_Meeting.ics**
7K

 **2. BT 7& 8 SEM Syllabus.docx**
562K

Invitation BOS meeting Dept. of Biotechnology

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>
To: bt_faculty <bt_faculty@rvce.edu.in>

Thu, Jun 3, 2021 at 5:22 PM

Dear All

The BOS members, Dr. Narendra Kumar S and Dr. Sumathra M (Invitee), Faculty who have contributed to the syllabus have been invited for the BoS meeting scheduled in Dept. of Biotechnology, R V College of Engineering tomorrow **Friday 04 June 2021 at 6 PM. to finalize 7 and 8 Sem, 2018 scheme Syllabus for BE Biotechnology.** Kindly join the meeting for your valuable inputs.

The syllabus and online meeting Webex link to join the meeting. is also sent.

Thanking you

ahmanjunatha ahmanjunatha is inviting you to a scheduled Webex meeting.

Friday, June 4, 2021

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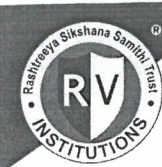
--
Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 67178048

3 attachments

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7K

 **Webex_Meeting.ics**
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 **2. BT 7& 8 SEM Syllabus.docx**
562K



04-06-2021

ACTION TAKEN REPORT FOR UG 2018 SCHEME- 23rd BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	<ul style="list-style-type: none">Implementation of NEP	Selection of the online courses needs to be done to offer a greater number of electives	NPTEL and MOOC courses were to be selected for the electives
2		Other suggestions of the BoS members were recorded but not implemented	On the basis of the discussions made by central office and Internal BoS members with the chairperson the suggestions were not incorporated

Vidya Narayan



Date: 04-06-2021

The Dr. Vidya Niranjana Chairman of Board of Studies welcomed the members and the following points were discussed:

Agenda #	Discussions and Resolutions
24.1	Finalization of scheme and syllabus of 7 th and 8 th Sem. 2018 scheme

Mr. Jayachandra N suggested :

- 1) To correct artificial intelligence and precision agriculture. Also for industry participation in preparation and delivery of the content from these courses

Resolution:

- The scheme and syllabus was accepted with minor modifications.

Dr. Savithri Bhat suggested for:

- 1) Modification of unit 1 in Genomics and proteomics since it is taken care in Molecular Biology.
- 2) Look into the characterization methods and include the one's which are not taught in Biophysics and Instrumentation.

Resolution:

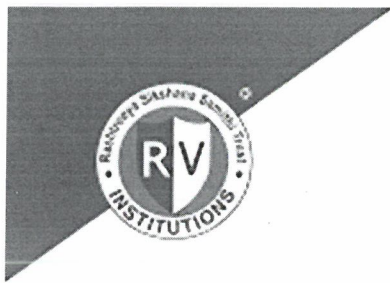
- Suggestions are considered and modified in the syllabus.

Dr. Babylakshmi Muthusamy suggested

- 1) for addition of Antimicrobial resistance in genomics for early diagnosis of diseases and drug delivery.

Resolution:

- Suggestions are considered and incorporated in syllabus.



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Dr B S Gowrishankar suggested :

- 1) In downstream course: Basics of filtration and drying operations. Include book as reference on Bioseparation by Harrison
- 2) In equipment design -every instrument should be made as 1 unit
 - The following suggestions are made to include in Equipment Design
 - Unit-1: Fermenter/Reactor
 - Unit-2: Heat exchanger (STHE)
 - Unit-3, Unit-4 and Unit-5: No changes
- 3) Scheme of evaluation:

Instead of CAD, a neat sketch of equipment may be expected in the Question paper for 20 Marks.
Design: 80 Marks (The neat sketch would be considered if the design is correct in all respects). This avoids the complexity in the evaluation of the Design course.

- 4) Internship needs to be included. And tagged with the industries.

Resolution:

- Suggestions are considered and incorporated in syllabus.

Internal BoS :

- Dr Nagashree Rao suggested for the change of Alternate farming to sustainable and precision agriculture
- Dr Nagashree Rao and Dr Sumatra suggested for making 2 units of proteomics instead of one.

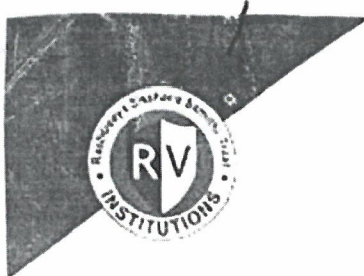
Based on the stakeholders feedback the following list of new courses were added for 7th and 8th Sem. 2018 scheme B.E. Biotechnology

Sl. No.	Course Title	Course code
1	Internship	18BT74

Meeting concluded with thanks to the chair

Vidya Niranjan

Dr. Vidya Niranjan
Chairman - Board of Studies
Department of Biotechnology



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Meeting # 24

Discussions regarding Board of Studies

Minutes of meeting held on Tuesday, 04 June 2021

Agenda	Finalization of scheme and syllabus of 7 th and 8 th sem 2018 scheme
Date	Friday, 04 June 2021
Time	06.00 PM
Venue	Online

Members Present:				
#	Name of the faculty	Designation	Dept.	Signature
1.	Dr. Savithri Bhat	Professor, Department of Biotechnology, B.M.S. College of Engineering	Department of Biotechnology.	Attended
2.	Dr B S Gowrishankar	Professor and Head, Department of Biotechnology, SIT, Tumkur	Department of Biotechnology	Attended
3.	Dr. Babylakshmi Muthusamy	Institute of Bioinformatics	Research Scientist	Attended
4.	Dr. Jitendra Kumar	Managing Director, <u>Bangalore Bioinnovation Centre (BBC), (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore</u>	<u>Bangalore Bioinnovation Centre (BBC), (KBITS)</u>	Attended
5.	Mr. Jayachandra N	<u>Data Analyst, Bayer, Bengaluru</u>	<u>Data Analyst</u>	Attended
6.	Dr. Vidya Niranjan Chairperson	Professor and Head	Department of Biotechnology	Attended
7.	Dr. H G Ashok Kumar	Professor	Department of Biotechnology	Attended
8.	Dr. A V Narayan	Associate Professor	Department of Biotechnology	Attended
9.	Dr. Neeta Shivakumar	Associate Professor	Department of Biotechnology	Attended
10.	Dr. Nagashree N. Rao	Associate Professor	Department of Biotechnology	Attended
11.	Dr. G. Vijaya Kumar	Associate Professor	Department of Biotechnology	Attended



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12.	Dr. Trilokchandran B	Assistant Professor	Department of Biotechnology	Attended
13.	Dr. Shivandappa	Assistant Professor	Department of Biotechnology	Attended
14.	Dr. Sumathra M	Assistant Professor (Invited)	Department of Biotechnology	Attended
15.	Dr. Narendra Kumar S	Assistant Professor (Invited)	Department of Biotechnology	Attended
16.	Dr. Manjunatha Reddy	Associated Professor (Invited)	Department of Biotechnology	Attended

Enclosed: Meeting minutes

Vidya Niranjan

Dr. Vidya Niranjan
Chairman - Board of Studies
Department of Biotechnology

Head of the Department
Dept. of Bio-Technology
R.V. College of Engineering
BANGALORE - 560 059



BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Inviting for Board of Studies meeting (online) at Department of Biotechnology, RVCE.

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Tue, Mar 8, 2022 at 11:22 AM

To: savithri.bt@bmsce.ac.in, "bsgowri@sit.ac.in" <bsgowri@sit.ac.in>, vivekbabu.cs@cftri.res.in, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>, reshma@pes.edu

Dear Sir / Madam,

Sub: Board of Studies meeting (online) at Department of Biotechnology, RVCE.

To Finalize Scheme and syllabus of III & IV Sem. B.E. 2020 Scheme B.E. Biotechnology syllabus which is due for revision in 2022. Your expertise review will help us in designing the opted curriculum. The Board of Studies online meeting is scheduled in the Department of Biotechnology at R V College of Engineering on 12-03-2022 at 10.00 AM. You are requested to make it convenient to attend the meeting and provide your valuable inputs.

The draft scheme & syllabus is undergoing review internally and will be sent shortly along with the meeting link.

--

Dr. Vidya Nirajan
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 68188159

DEPARTMENT OF BIOTECHNOLOGY
R V COLLEGE OF ENGINEERING

Date: 08-03-2022

CIRCULAR

Sub: Board of Studies meeting (Online) to Finalize Scheme and syllabus of III & IV Sem. B.E. 2020 Scheme B.E. Biotechnology syllabus which is due for revision in 2022

To Finalize Scheme and syllabus of III & IV Sem. B.E. 2020 Scheme B.E. Biotechnology syllabus which is due for revision in. Your Expertise & Review advice will help us in designing the opted curriculum. The Board of Studies (online) is scheduled in the Department of Biotechnology on 12-03-2022 at 10.00 AM. You are requested to make it convenient to attend the meeting and provide your valuable inputs.

BOS members

Dr. Vidya Niranjana, Professor and Head

Dr. H G Ashok Kumar, Professor

Dr. A V Narayan, Associate Professor

Dr. Neeta Shivakumar, Associate Professor

Dr. Nagashree N. Rao, Associate Professor

Dr. G. Vijaya Kumar, Assistant Professor

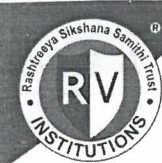
Dr. Trilokchandran B, Assistant Professor

Dr. S.K. Shivandappa, Assistant Professor

Dr. Vidya Niranjana

Chairman

BOS, in Biotechnology



12-03-2022

ACTION TAKEN REPORT FOR UG 2018 SCHEME- 24th BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	<ul style="list-style-type: none">To finalize Syllabus for UG Biotechnology (VII & VIII Semester) for 2018 scheme	Unit I modification as the central dogma taken care in molecular Biology	Unit I was modified
		Characterization methods to be included which is not taught in Biophysics and Instrumentation	STM and AFM was included
		Alternate farming should be changed to Sustainable and Precision Agriculture	Incorporated
		Reference Books on Bioseparation by Harrison to be included	Incorporated
		Equipment Design and Drawing -every equipment should be made as one unit	Incorporated
		Other suggestions of the BoS members were recorded but not implemented	On the basis of the discussions made by Internal BoS members with the chairperson the suggestions were not incorporated

Vidya Narayan



Date: 12-03-2022

The Dr. Vidya Nirajan Chairman of Board of Studies welcomed the members and the following points were discussed:

Agenda #	Discussions and Resolutions
25.1	To Finalize Scheme and syllabus of III & IV Sem. B.E. 2020 Scheme B.E. Biotechnology syllabus which is due for revision in 2022

Dr. C.S. Vivek Babu suggested:

- 1) Bioremediation and phytoremediation technique needs to be introduced in Environmental technology
- 2) Appreciated the Idea of Skill based labs introduction and approved the same.
- 3) He also suggested that he would share the contents for Skill based labs followed by CFTRI

Resolution:

The scheme and syllabus was accepted with minor modifications by BoS members

Dr. Savithri Bhat suggested for:

- 1) Suggested for modification in units in 2 credit courses depending on the valuation pattern in SEE
- 2) Idea of Skill based labs introduction was also approved by all BoS members

Resolution: 5 Units will be retained for 2 unit courses

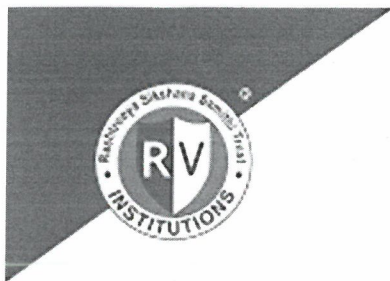
The scheme and syllabus was accepted with minor modifications by BoS members

Dr B S Gowrishankar suggested :

- 4) To project tentative scheme for all the semesters
- 5) In Bioprocess calculations Energy balance concepts must be included in 5th Unit
- 6) Include the recent edition on bioprocess by Paulin dorain
- 7) 2 credits are not sufficient for Thermodynamics
- 8) He will share the syllabus of thermodynamics w.r.t Biotechnology domain
- 9) Bioremediation and phytoremediation technique needs to be introduced in Environmental technology
- 10) Pumps, mass transfer (diffusion) needs to be introduced in unit5. Numerical concepts on heat exchangers need to be introduced in Unit Operations
- 11) Process control is clubbed with Microbial technology in the VI semester

Resolution:

- 1) Suggestions given will be incorporated
- 2) Thermodynamics content would be taken care in the experiential learning process.



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Dr Reshma suggested

- 1) Unit 4 must be made more problematic than making it more of downstream process
- 2) Idea of Skill based labs introduction was also approved by all BoS members
- 3) Proteins and nucleic acids must be made as separate units
- 4) Basic concepts on environmental technology needs to be introduced in Unit 1 and present unit 1 needs to be moved as unit 5

Resolution: The scheme and syllabus was accepted with minor modifications by BoS members

Dr Jayachandru

Following are suggestions on Biostatistics

1. We can add a topic on tools, applications of Biostatistics.
2. I hope 2nd module also covers few use cases of regression and correlation and all the important graphical representation.
3. 2nd module looks less descriptive, can accommodate few more aspects of regression such as logistic regression, Goodness of fit, regression validation.

Resolution: The scheme and syllabus was accepted with minor modifications by BoS members

Internal BoS :

Dr Ashok Kumar A G suggested to retain the Molecular Biology in CIB only.

Based on the stakeholders feedback the following list of new courses were added for III & IV Sem. B.E. 2021 Scheme B.E. Biotechnology

Sl. No.	Course Title	Course code
1	Cell and Molecular Biology	21BT33
2	Bioprocess Calculations	21BT35
3	Biochemical Thermodynamics	21BT36
4	Computer Aided Drug Design	21BT4A1
5	Organ Printing	21BT4A2
6	Big data computing	21BT4A3
7	Cellular biophysics, its framework and quantitative biology	21BT4A4
8	Introduction to Mechanobiology	21BT4A5

Meeting concluded with thanks to the chair

Vidya Niranjana

Dr. Vidya Niranjana
Chairman - Board of Studies
Department of Biotechnology

2021 SCHEME - CREDITS AND COMPONENTS

III SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21MA31A*	Engineering Maths- III	3	1	0	4	MA	Theory	1.5	100	****	3	100	****
2	21BT32A**	Environmental Technology	2	0	0	2	BT	Theory	1	50	****	2	50	****
3	21XX33	Concepts in Biology	3	0	1	4	XX	Theory+Lab	1.5	100	50	3	100	50
4	21XX34	Biochemistry	3	0	1	4	XX	Theory+Lab	1.5	100	50	3	100	50
5	21XX35	Bioprocess and calculations	2	1	0	3	XX	Theory	1.5	100	****	3	100	****
6	21XX36	Molecular Biology	2	0	0	2	XX	Theory	1.5	50	****	2	50	****
7	21DCS37***	Bridge Course: C Programming	2(A)	0	0	AUDIT	CS	Theory	1.5	100	****	3	100	****
		Kannada Course: AADALITHA KANNADA (18HS38A) / VYAVAHARIKA KANNADA (18HS38V)												
8	21HS38A / 21HS38V		1	0	0	1	HSS	Theory	1	50	****	2	50	****
9	21HS39	Ability Enhancement course - I	0	0	1	1	HSS	Theory	1	50	****	2	50	****
10	21XX310	Summer Internship- I	0	0	2	2	XX	Lab	1	****	50	1	****	50

* Summer Internship-1 will be done after the II sem for 03 Weeks

IV SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21MA41A*	Engineering Maths- IV	2	1	0	3	MA	Theory	1.5	100	****	3	100	****
2	21BT42B**	Biology for Engineers / Engineering Materials	2	0	0	2	BT/M E/EC	Theory	1	50	****	2	50	****
3	21XX43	Unit Operations	2	1	1	4	XX	Theory+Lab	1.5	100	50	3	100	50
4	21XX44	Basics of Computer Applications	2	1	1	4	XX	Theory+Lab	1.5	100	50	3	100	50
5	21XX45	Biophysics and Instrumentation	2	0	1	3	XX	Theory+Lab	1.5	100	50	3	100	50
6	21XX4AX	Professional Elective - Group A	2	0	0	2	XX	MOOC	1.5	100	****	3	100	****

7	21XX46	Design Thinking Lab	0	0	2	2	XX	Lab	1	****	50	2	****	50
8	21DMA47***	Bridge Course: Mathematics	2 (A)	1	0	AUDIT	MA	Theory	1.5	50	****	2	50	****
9	21HSS48	Universal Human Values and Professional Ethics	2	0	0	2	HSS	Theory	1	50	****	2	50	****

* Summer Internship-II will be done after the IV sem for 04 Weeks

V SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21HSI51	Intellectual Property Rights & Entrepreneurship / Fundamentals of Management & Economics	3	0	0	3	HSS	Theory	1.5	100	****	3	100	****
2	21XX52	Bioinformatics	3	0	1	4	XX	Theory+Lab	1.5	100	50	3	100	50
3	21XX53	Genetic Engineering and Application	2	1	1	4	XX	Theory+Lab	1.5	100	50	3	100	50
4	21B5XX	Professional Elective - A (Local Elective)	3	0	0	3	XX	Theory	1.5	100	****	3	100	****
5	21G5CXX	Nanotechnology	3	0	0	3	XX	Theory	1	100	50	3	100	50
7	21XX55	Summer Internship - II	0	0	2	2	XX	Lab	1	****	50	1	****	50

* For Circuit Branches -Intellectual Property Rights & Entrepreneurship / For Non-Circuit Branches - Fundamentals of Management & Economics
 * In the 6th Semester both the courses will be interchanged between the Circuits & Non circuits branches

VI SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21HSI61	Intellectual Property Rights & Entrepreneurship / Fundamentals of Management & Economics	3	0	0	3	HSS	Theory	1.5	100	****	3	100	****
2	21XX62	Genomics, Proteomics & Nanotechno	3	0	0	3	XX	Theory	1.5	100	****	3	100	****

3	21XX63	Reaction Engineering	2	0	1	3	XX	Theory+Lab	1.5	100	50	3	100	50
4	21XX64	Plant and Animal Biotechnology	2	0	1	3	XX	Theory+Lab	1.5	100	50	3	100	50
5	21C6XX	Professional Elective - C (Local Elective Domain Specialization)	2	0	0	2	XX	Theory	1.5	100	****	3	100	****
6	21D6XX	Professional Elective - D (Local Elective Ability Enhancement Courses)	2	0	0	2	XX	Theory	1.5	100	****	3	100	****
7	21G6EXX	Bioinspired Engineering	2	1	0	3	XX	Theory	1.5	100	****	3	100	****
9	21XX65	Minor Project	0	0	2	2	XX	Lab	1	****	50	2	****	50

* Industry Internship / Research Internship will be done after the VI sem

VII SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21HSI71	Constitution of India	2	0	0	2	HSS	Theory	1.5	50	****	2	50	****
2	21XX72	Microbial Technology	3	1	0	4	XX	Theory	1.5	50	****	2	50	****
3	21XX73	Downstream Processing and recovery	3	0	1	4	XX	Theory+Lab	1.5	100	50	3	100	50
4	21F7XX	Professional Elective - F (Local Elective)	2	1	0	3	XX	Theory	1.5	100	50	3	100	50
5	21G7XX	Professional Elective - G (Local Elective)	2	0	0	2	XX	MOOC	1.5	100	****	3	100	****
6	21H7XX	Computational Genomics	3	0	0	3	XX	Theory+Lab	1.5	100	****	3	100	****
8	21XX75	Internship Evaluation	0	0	3	3	XX	Lab	1	****	50	1	****	50

VIII SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21XX81	Major Project	0	0	14	14	XX	Lab	1.5	****	200	3	****	200



Meeting # 25

Discussions regarding Board of Studies

Minutes of meeting held on Saturday, 12 March 2022

Agenda	To Finalize Scheme and syllabus of III & IV Sem. B.E. 2020 Scheme B.E. Biotechnology syllabus which is due for revision in 2022
Date	Saturday, 12 March 2022
Time	10.00 AM
Venue	Online / Offline

Members Present:

#	Name of the faculty	Designation	Dept.	Signature
1.	Dr. Savithri Bhat	Professor, Department of Biotechnology, B.M.S. College of Engineering	Department of Biotechnology,	Attended Online.
2.	Dr B S Gowrishankar	Professor and Head, Department of Biotechnology, SIT, Tumkur	Department of Biotechnology	
3.	Dr. C.S. Vivek Babu	Principal Scientist, Food Protectants & Infestation Control (FPIC), , Karnataka, INDIA	Department, CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysuru -570 020	Attended Online.
	Dr. Jitendra Kumar	Managing Director, Bangalore Bioinnovation Centre (BBC), (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore	Bangalore Bioinnovation Centre (BBC), (KBITS)	Attended Online.
5.	Mr. Jayachandra N	Data Analyst, Bayer, Bengaluru	Data Analyst	Attended Online.
6.	Dr. Vidya Niranjan Chairperson	Professor and Head	Department of Biotechnology	
7.	Dr. H G Ashok Kumar	Professor	Department of Biotechnology	
8.	Dr. A V Narayan	Associate Professor	Department of Biotechnology	
9.	Dr. Neeta Shivakumar	Associate Professor	Department of Biotechnology	
10.	Dr. Nagashree N. Rao	Associate Professor	Department of Biotechnology	
11.	Dr. G. Vijaya Kumar	Associate Professor	Department of Biotechnology	
12.	Dr. Trilokchandran B	Assistant Professor	Department of Biotechnology	
13.	Dr. Shivandappa	Assistant Professor	Department of Biotechnology	



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New Delhi, Accredited
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14.	Dr. Reshma	Professor	PES University	Attended online
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Enclosed: Meeting minutes

Vidya Niranjana
Dr. Vidya Niranjana
Chairman - Board of Studies
Department of Biotechnology

14/5/22

Head of the Department
Dept. of Bio-Technology
RV College of Engineering
BANGALORE - 560 059

DEPARTMENT OF BIOTECHNOLOGY
R V COLLEGE OF ENGINEERING

Date: 11-08-2022

CIRCULAR

Sub: Invitation for Board of Studies meeting scheduled on 13 Aug 2022.

The Board of Studies is being scheduled on 13 Aug 2022 at 10.00 AM and the agenda as mentioned below.
You are requested to make it convenient to attend the meeting and provide your valuable inputs.

Agenda:

- 1) Dissemination of Finalized 2021 Scheme for III to VIII Sem. B.E. Biotechnology
- 2) Suggestion on framing the syllabus.
- 3) Discussion on PG Scheme and Syllabus.

BOS members

Dr. Vidya Niranjana, Professor and Head
Dr. H G Ashok Kumar, Professor
Dr. A V Narayan, Associate Professor
Dr. Neeta Shivakumar, Associate Professor
Dr. Nagashree N. Rao, Associate Professor
Dr. G. Vijaya Kumar, Assistant Professor
Dr. Trilokchandran B, Assistant Professor
Mr. S.K. Shivandappa, Assistant Professor

Vidya Niranjana
11/8/22
Dr. Vidya Niranjana
Chairman
BOS in Biotechnology



BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Invitation for Board of Studies meeting, Dept. of Biotechnology, RVCE

Mon, Aug 8, 2022 at 1:34 PM

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

To: nee@iitdh.ac.in, piyush.khandelia@hyderabad.bits-pilani.ac.in, piyush.khandelia@gmail.com,

vivekbabu.cs@cftri.res.in, jitendraitbt@gmail.com, Jayachandra N <itsjay510@gmail.com>

Cc: Vidya N <vidya.n@rvce.edu.in>, Neeta Shivakumar <neeta@rvce.edu.in>

Dear Sir / Madam,

As per the Academic Council meeting dated 21-7-2022 you have been nominated as the Part of Board of Studies (2022 – 2024) in Department of Biotechnology, R V College of Engineering. We welcome you to be a Member of the Board of Studies.

The Board of Studies is being scheduled on 13 Aug 2022 this Saturday at 10.00 AM onwards and the agenda as mentioned below. You are requested to make it convenient to attend the meeting and provide your valuable inputs and confirm your presence.

Agenda:

- 1) Dissemination of Finalized 2021 Scheme for III to VIII Sem. B.E. Biotechnology
- 2) Suggestion on framing the syllabus.
- 3) Discussion on PG Scheme and Syllabus.

--
Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 68188159

08-08-2022, 13:



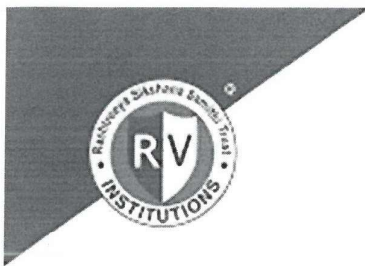
Department of Biotechnology

13-08-2022

ACTION TAKEN REPORT FOR UG 2020 SCHEME- 25TH BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	<ul style="list-style-type: none">To finalize 2020 schemeTo finalize Syllabus for UG Biotechnology (III & IV Semester) for 2020 scheme	Bioprocess calculations energy balance concepts must be included in unit 5	Incorporated
2		Idea of Skill based labs were approved by all BoS members	Incorporated
3		Other suggestions of the BoS members were recorded but not implemented	On the basis of the discussions made by Internal BoS members with the chairperson the suggestions were not incorporated

Vidya Nanyan



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Date: 13 Aug 2022

Dr. Vidya Niranjana Chairman of Board of Studies heartily welcomed the new members of the Board of Studies nominated by the Academic council. The new members were enlightened on the process of framing the scheme of 2021 according to NEP guidelines by the chairman through presentation. The members were also highlighted on the finalized scheme from III to VIII sem discussing the scheme and syllabus in detail. The following was the agenda of the meeting:

Agenda #	Discussions and Resolutions
26.1	Dissemination of Finalized 2021 Scheme for III to VIII Sem. B.E. Biotechnology
26.2	Suggestion on framing the syllabus.
26.3	Discussion on PG Scheme and Syllabus.

External Name:

Dr. Nilkamal Mahanta discussed with the BoS chairman on the structure of the scheme and syllabus specially on Internship / major projects allotment to the students.

Dr. Piyush Khandelia shared that BITS (pilani) got tied with the Pharma companies and other related Biotech companies to place their students for internship, major projects and for their placements.

Resolution:

More efforts on MoU with the industries and alumni inputs

Internal BoS :

- Chairman congratulated and thanked all the faculty for the involvement and support in curriculum framing
- Dr Trilokchandran requested the external members to attend offline meetings in future
- Dr Ashok Kumar HG said that the process and the scheme and syllabus was in place
- Dr Neeta Shivakumar requested the external BoS members to share some interdisciplinary subjects to be added to the existing elective list
- Dr Vijaykumar requested to share the syllabus on Process Design and calculations.

Based on the stakeholders feedback the scheme was found satisfactory for Biotechnology UG 2021 Scheme and PG 2022 Scheme.

Meeting concluded with thanks to the chair

Vidya Niranjana

Dr. Vidya Niranjana
Chairman - Board of Studies
Department of Biotechnology



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Meeting # 26

Discussions regarding Board of Studies

Minutes of meeting held on Saturday, 13 Aug 2022

Agenda	
26.1	Dissemination of Finalized 2021 Scheme for III to VIII Sem. B.E. Biotechnology
26.2	Suggestion on framing the syllabus.
26.3	Discussion on PG Scheme and Syllabus.
Date	Saturday, 13 Aug 2022
Time	10:00 AM
Venue	Biotechnology Department

Members Present:

#	Name of the faculty	Designation	Dept.	Signature
1.	Dr. Nilkamal Mahanta	Assistant Professor Indian Institute of Technology (IIT) Dharwad	Department of Chemistry	Attended Online.
2.	Dr. Piyush Khandelia	Assistant Professor B-210, BITS-Pilani, Hyderabad Campus, Jawahar Nagar, Kapra Mandal, Hyderabad 500078, Telangana, INDIA	Department of Biological Sciences	Attended Online.
3.	Dr. C.S. Vivek Babu	Principal Scientist Food Protectants & Infestation Control (FPIC), Mysuru -570 020, Karnataka, INDIA	Department CSIR-Central Food Technological Research Institute (CSIR-CFTRI),	Could not Attend.
4.	Dr. Jitendra Kumar	Managing Director, Bangalore Bioinnovation Centre (BBC), (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore	Bangalore Bioinnovation Centre (BBC), (KBITS)	Could not Attend.
5.	Mr. Jayachandra N	Data Analyst, Bayer, Bengaluru	Data Analyst	Could not Attend.
6.	Dr. Vidya Niranjana Chairperson	Professor and Head	Department of Biotechnology	V. Vidya Niranjana
7.	Dr. H G Ashok Kumar	Professor	Department of Biotechnology	H. G. Ashok Kumar
8.	Dr. A V Narayan	Associate Professor	Department of Biotechnology	A. V. Narayan



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9.	Dr. Neeta Shivakumar	Associate Professor	Department of Biotechnology	<i>Neeta</i>
10.	Dr. Nagashree N. Rao	Associate Professor	Department of Biotechnology	<i>Nagashree</i>
11.	Dr. G. Vijaya Kumar	Associate Professor	Department of Biotechnology	<i>G. Vijaya Kumar</i>
12.	Dr. Trilokchandran B	Assistant Professor	Department of Biotechnology	<i>Trilokchandran</i>
13.	Dr. Shivandappa	Assistant Professor	Department of Biotechnology	<i>Shivandappa</i>

Enclosed: Meeting minutes

Vidya Naranjan
Dr. Vidya Naranjan
Chairman - Board of Studies
Department of Biotechnology

Head of the Department
Dept. of Bio-Technology
R.V. College of Engineering
BANGALORE - 560 059



BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Invitation for Board of Studies meeting RVCE BT

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Wed, Nov 23, 2022 at 9:29 AM

To: neel@iitdh.ac.in, piyush.khandelia@hyderabad.bits-pilani.ac.in,
piyush.khandelia@gmail.com, vivekbabu.cs@cftri.res.in, jitendraitbt@gmail.com, Jayachandra
N <itsjay510@gmail.com>

Cc: Vidya N <vidya.n@rvce.edu.in>

Dear Sir / Madam,

The Board of Studies is being scheduled in the Department of Biotechnology, R V College of Engineering on 26 November 2022 this Saturday at 10.00 AM onwards and the agenda as mentioned below. You are requested to make it convenient to attend the meeting and provide your valuable inputs and confirm your presence.

Agenda:

- 1) Approval of Finalized 2021 Scheme for M.Tech. Biotechnology
- 2) Suggestion on framing the syllabus.

--

Dr. Vidya Niranjana
Professor & HOD.
Department of Biotechnology,
R V College of Engineering,
Bengaluru - 560059
Ph: 080 68188159

36

DEPARTMENT OF BIOTECHNOLOGY
R V COLLEGE OF ENGINEERING

Date: 22-11-2022

CIRCULAR

Sub: Invitation for Board of Studies meeting scheduled on 26 Nov 2022.

The Board of Studies is being scheduled on 26 Nov 2022 at 10.00 AM and the agenda as mentioned below.
You are requested to make it convenient to attend the meeting and provide your valuable inputs.

Agenda:

- 1) Approval of Finalized 2021 Scheme for M.Tech. Biotechnology
- 2) Suggestion on framing the syllabus.

BOS members

Dr. Vidya Niranjana, Professor and Head

Dr. H G Ashok Kumar, Professor

Dr. A V Narayan, Associate Professor

Dr. Neeta Shivakumar, Associate Professor

Dr. Nagashree N. Rao, Associate Professor

Dr. G. Vijaya Kumar, Assistant Professor

Dr. Trilokchandran B, Assistant Professor

Dr. Shivandappa, Assistant Professor

Dr. Vidya Niranjana

Chairman

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Head of the Department
R V College of Engineering
BOS in Biotechnology
22/11/22



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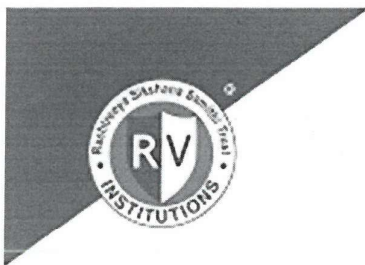
Department of Biotechnology

26-05-2023

ACTION TAKEN REPORT FOR UG 2021 SCHEME- 27TH BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	Approval of Finalized 2022 scheme for MTech. Biotechnology Suggestion on framing the syllabus	<ul style="list-style-type: none">Genome editing system has to be separated into TALENS and CRISPER and included in Upstream Process TechnologyReference books have to be updated with the latest editions	Incorporated Incorporated

Vidya Narayan



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Date: 27 Nov 2022

The Dr. Vidya Niranjana Chairman of Board of Studies welcomed the members and the following points were discussed:

Agenda #	Discussions and Resolutions
27.1	Approval of Finalized 2022 Scheme for M.Tech. Biotechnology
27.2	Suggestion on framing the syllabus.

Dr. C.S. Vivek Babu suggested:

- 3) In the subject Molecular Biology and Genetic Engineering (2MBT12TL) the topics of genome editing system to be separated as Clustered regularly interspace short palindromic repeats (CRISPR)/Cas systems, Zinc finger nucleases, Transcription activator-like effector nuclease (TALENs)
- 4) In the subject Upstream Process Technology (22MBT22TL) the Application of genome editing to be included.

Resolution: The topics were separated and incorporated as per the suggestion given.

Dr. Nilkamal Mahanta suggested for:

- 2) References Books has to be updated with latest reference books for the subject Molecular Biology and Genetic Engineering (2MBT12TL) and Upstream Process Technology (22MBT22TL).

Resolution: The reference books was updated with recent one

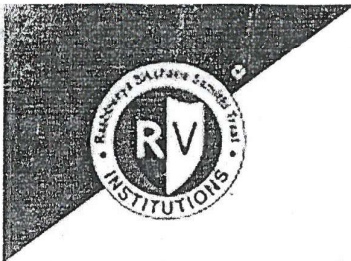
Based on the stakeholders feedback the following list of new courses were added for 2022 Scheme for M.Tech. Biotechnology

Sl. No.	Course Title	Course Code
1	Bioanalytical laboratory	22MBT14L
2	Enzyme Technology	22MBT1A2T
3	Principles of Bioprocess Engineering	22MBT1B2T
4	Industrial Biotechnology	22MBT1B4T
5	Biopython Lab	22MBT24L
6	3D Bioprinting	22MBT2C1T
7	Fermentation Technology	22MBT2C2T
8	Parenteral Formulation	22MBT2C3T

Meeting concluded with thanks to the chair

Vidya Niranjana

Dr. Vidya Niranjana
Chairman - Board of Studies
Department of Biotechnology



Meeting # 27

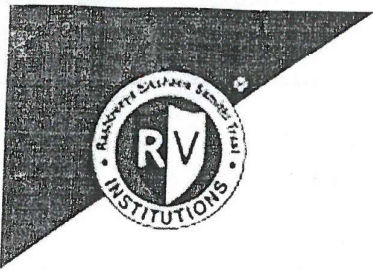
Discussions regarding Board of Studies

Minutes of meeting held on Saturday, 26 November 2022

Agenda	
27.1	Approval of Finalized 2022 Scheme for M.Tech. Biotechnology
27.2	Suggestion on framing the syllabus.
Date	Saturday, 26 November 2022
Time	10.00 AM
Venue	BT Auditorium

Members Present:

#	Name of the faculty	Designation	Dept.	Signature
1.	Dr. Nilkamal Mahanta	Assistant Professor	Department of Chemistry, Indian Institute of Technology (IIT) Dharwad	Attended (Online)
2.	Dr. Piyush Khandelua	Assistant Professor	B - 210, Department of Biological Sciences BITS-Pilani, Hyderabad Campus Jawahar Nagar, Kapra Mandal, Hyderabad 500078, Telangana, INDIA	Attended (Online)
	Dr. C.S. Vivek Babu	Principal Scientist, Food Protectants & Infestation Control (FPIC), , Karnataka, INDIA	Department, CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysuru -570 020	Attended (Online)
4.	Dr. Jitendra Kumar	Managing Director, <u>Bangalore Bioinnovation Centre (BBC)</u> , (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore	<u>Bangalore Bioinnovation Centre (BBC)</u> . (KBITS)	Absent
5.	Mr. Jayachandra N	Data Analyst, Bayer, Bengaluru	Data Analyst	Dr. Jay.
6.	Dr. Vidya Niranjan Chairperson	Professor and Head	Department of Biotechnology	Vidya Niranjan
7.	Dr. H G Ashok Kumar	Professor	Department of Biotechnology	H. G. Ashok Kumar
8.	Dr. A V Narayan	Associate Professor	Department of Biotechnology	A. V. Narayan
9.	Dr. Neeta Shivakumar	Associate Professor	Department of Biotechnology	Neeta Shivakumar
10.	Dr. Nagashree N. Rao	Associate Professor	Department of Biotechnology	Nagashree N. Rao



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11.	Dr. G. Vijaya Kumar	Associate Professor	Department of Biotechnology	<i>[Signature]</i>
12.	Dr. Trilokchandran B	Assistant Professor	Department of Biotechnology	<i>B. 26/11/22</i>
13.	Dr. Shivandappa	Assistant Professor	Department of Biotechnology	<i>Absent</i>

Enclosed: Meeting minutes

Vidya Niranjan
26/11/22
Dr. Vidya Niranjan
Chairman - Board of Studies
Department of Biotechnology

DEPARTMENT OF BIOTECHNOLOGY
R V COLLEGE OF ENGINEERING

Date: 24/05/2023

CIRCULAR

Sub: Invitation for Board of Studies meeting scheduled on 26 May 2023.


The Board of Studies is being scheduled on 26 May 2023 at 10.00 AM and the agenda as mentioned below.


You are requested to make it convenient to attend the meeting and provide your valuable inputs.


Agenda:


- 1) Approval of III and IV semester 2022 Scheme and Syllabus for B.E. Biotechnology
- 2) Approval of V & VI semester 2021 Scheme and Syllabus B.E. Biotechnology.

BOS members


Dr. Vidya Niranjana, Professor and Head 

Dr. H G Ashok Kumar, Professor 


Dr. A V Narayan, Associate Professor 


Dr. Neeta Shivakumar, Associate Professor 

Dr. Nagashree N. Rao, Associate Professor

Dr. G. Vijaya Kumar, Assistant Professor 

Dr. Trilokchandran B, Assistant Professor 

Dr. Shivandappa, Assistant Professor 


Dr. Vidya Niranjana
Chairman

BOS in Biotechnology

Head of the Department
Dept. of Bio-Technology
R.V. College of Engineering
BANGALORE - 560 059

Invitation for BOS meeting on 28 May 2023 RVCE BT

BIOTECHNOLOGY RVCE <hod.bt@rvce.edu.in>

Wed, May 24, 2023 at 9:44 AM

To: Nilkamal Mahanta <neel@iitdh.ac.in>, piyush.khandelia@hyderabad.bits-pilani.ac.in,
piyush.khandelia@gmail.com, vivekbabu.cs@cftri.res.in, jitendraitbt@gmail.com, Jayachandra N
<itsjay510@gmail.com>

Cc: Vidya N <vidya.n@rvce.edu.in>

Dear Sir / Madam,

The Board of Studies is being scheduled in the Department of Biotechnology, R V College of Engineering on 26 May 2023 this Friday at 10.00 AM onwards and the agenda as mentioned below. You are requested to make it convenient to attend the meeting and provide your valuable inputs and confirm your presence.

Agenda:

- 1) Approval of III and IV semester 2022 Scheme and Syllabus for B.E. Biotechnology
- 2) Approval of V & VI semester 2021 Scheme and Syllabus B.E. Biotechnology.

--

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Department of Biotechnology

27-11-2022

ACTION TAKEN REPORT FOR UG 2021 SCHEME- 26TH BOS MEETING

Sl.No.	Agenda	BOS Members comment	Action Report
1	<ul style="list-style-type: none">To finalize 2021 schemeTo finalize Syllabus for UG Biotechnology (III & VIII Semester) for 2021 scheme	<ul style="list-style-type: none">Bioprocess calculations energy balance concepts must be included in unit 5Paulin Dorain 13th edition to be incorporated	<p>Incorporated</p> <p>Incorporated</p>
2		Idea of Skill based labs were approved by all BoS members	Incorporated
3		Other suggestions of the BoS members were recorded but not implemented	On the basis of the discussions made by Internal BoS members with the chairperson the suggestions were not incorporated

Vidya Naranjan



Date: 28 May 2023

The Dr Vidya Niranjana Chairman of Board of Studies welcomed the members and informed that the department has been accredited for 6 years. She also welcomed the Board members for RV -Merck Inaugural programme. Later the following points were discussed:

Agenda #	Discussions and Resolutions
28.1	Approval of III and IV semester 2022 Scheme and Syllabus for B.E. Biotechnology
28.2	Approval of V & VI semester 2021 Scheme and Syllabus B.E. Biotechnology.

Dr. Nilkamal Mahanta suggested:

1. To avoid repetitions in 2021 scheme and syllabus (Subjects like Essentials of computational genomics, Systems Biology, Computer aided drug design should be checked.)
2. To cross check the titles of BT related courses
3. Interns should be placed in academic labs/industry since RVCE is placed in ITBT hub

Resolution: All the above suggested points will be implemented

Dr. Piyush Khandelwal Suggested

1. Structure of the scheme was good
2. He appreciated the inclusion of skill-based labs Also asked for the clarification of the Skill based labs for which the chairperson replied that it would be convenient to take the exit under the NEP program and would facilitate the students in getting placed.
3. Suggested to refer the syllabus of CFTRI for food processing skill lab

Resolution: The syllabus of skill-based lab will be shared and the inputs will be incorporated

Dr. C.S. Vivek Babu Suggested

1. Need to carefully design the syllabus of Upstream technology since it has many courses clubbed into it (Plant, Animal and Microbial Biotechnology)

Resolution: Bioprocess and Fermentation technology is floated as a separate course and hence will not be clubbed with Upstream technology.

Mr. Jayachandra N Suggested

1. Requested to send the syllabus and he would mail his suggestions

Resolution: Will be incorporated later

Internal BoS: Dr Nagashree suggested to incorporate syllabus on molecular breeding in Agribiotechnology

Resolution: Already taken care in Agriculture Biotechnology and Genomics and Proteomics

Meeting concluded with thanks to the chair

Dr. Vidya Niranjana

Chairman - Board of Studies

Department of Biotechnology

Head of the Department
Dept. of Bio-Technology
RV College of Engineering
BANGALORE - 560 059



Discussions regarding Board of Studies

Minutes of meeting held on Friday, 26 May 2023

Agenda	
28.1	Approval of III and IV semester 2022 Scheme and Syllabus for B.E. Biotechnology
28.2	Approval of V & VI semester 2021 Scheme and Syllabus B.E. Biotechnology.
Date	Friday, 26 May 2023
Time	10.00 AM
Venue	BT Auditorium

Members Present:

#	Name of the faculty	Designation	Dept.	Signature
1.	Dr. Nilkamal Mahanta	Assistant Professor	Department of Chemistry, Indian Institute of Technology (IIT) Dharwad	Attended Online
2.	Dr. Piyush Khandelia	Assistant Professor	B - 210, Department of Biological Sciences BITS-Pilani, Hyderabad Campus Jawahar Nagar, Kapra Mandal, Hyderabad 500078, Telangana, INDIA	Attended Online
	Dr. C.S. Vivek Babu	Principal Scientist, Food Protectants & Infestation Control (FPIC), , Karnataka, INDIA	Department, CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysuru -570 020	Attended Online
4.	Dr. Jitendra Kumar	Managing Director, <u>Bangalore Bioinnovation Centre (BBC), (KBITS), Dept of IT, BT and S&T, Govt of Karnataka, Bangalore</u>	<u>Bangalore Bioinnovation Centre (BBC), (KBITS)</u>	Could Not Attend
5.	Mr. Jayachandra N	Data Analyst, Bayer, Bengaluru	Data Analyst	Attended Online
6.	Dr. Vidya Niranjana	Chairperson, Professor and Head	Department of Biotechnology	Vidya Niranjana
7.	Dr. H G Ashok Kumar	Professor	Department of Biotechnology	Ashok Kumar
8.	Dr. A V Narayan	Associate Professor	Department of Biotechnology	Narayan
9.	Dr. Neeta Shivakumar	Associate Professor	Department of Biotechnology	Neeta Shivakumar



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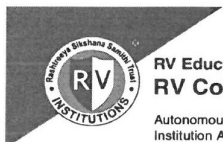
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10.	Dr. Nagashree N. Rao	Associate Professor	Department of Biotechnology	<i>Nagashree N. Rao</i>
11.	Dr. G. Vijaya Kumar	Associate Professor	Department of Biotechnology	<i>G. Vijaya Kumar</i>
12.	Dr. Trilokchandran B	Assistant Professor	Department of Biotechnology	<i>Trilokchandran B</i>
13.	Dr. Shivandappa	Assistant Professor	Department of Biotechnology	<i>Shivandappa</i>

Enclosed: Meeting minutes

V. Vidya Niranjana
Head of the Department
Dept. of Bio-Technology
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Chairman - Board of Studies
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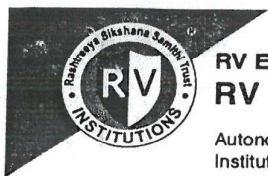
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Bachelor of Engineering in BIOTECHNOLOGY III Semester

Sl. No.	Course Code	Course Title	Credit Allocation				Bo S	Category	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total			Theory	Lab		Theory	Lab
1	MAT231BT*	Statistics, Laplace Transform and Numerical Methods	3	1	0	4	MA	Theory	100	***	3	100	***
2	XX232AT	Basket Courses - Group A	3	0	0	3	BT/ CV/ ME	Theory	100	***	3	100	***
3	BT233AI	Cell and Molecular Biology	3	0	1	4	BT	Theory + Lab	100	50	3	100	50
4	BT234AI	Unit Operations	3	0	1	4	BT	Theory + Lab	100	50	3	100	50
5	BT235AI	Thermodynamics and Bioanalytical Techniques	3	0	1	4	BT	Theory + Lab	100	50	3	100	50
6	BT237DL	Design Thinking Lab	0	0	2	2	BT	Lab	***	50	2	***	50
7	CS139DT**	Bridge Course: C Programming	2(A)	0	0	AUDI T	CS	Theory	50	***	***	***	***
Total						21							



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Group A: Basket Courses (Students can select any ONE COURSE out of THREE COURSES in ODD Sem & ONE COURSE out of remaining courses in EVEN Sem)								
2	CV	CV232AT	Environment & Sustainability	3	0	0	3	Theory
	ME	ME232AT	Material Science for Engineers	3	0	0	3	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	3	0	0	3	Theory



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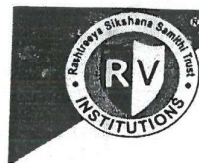
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Bachelor of Engineering in BIOTECHNOLOGY IV Semester

Sl. No	Course Code	Course Title	Credit Allocation				BoS	Category	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total			Theory	Lab		Theory	Lab
1	BT241AT	Biostatistics	3	0	0	3	BT	Theory	100	***	3	100	***
2	XX242AT	Basket Courses - Group A	3	0	0	3	BT/CV/ME	Theory	100	***	3	100	***
3	BT343AI	Programming for Computational Biology	3	0	1	4	BT	Theory + Lab	100	50	3	100	50
4	BT344AI	Biochemistry	3	0	1	4	BT	Theory + Lab	100	50	3	100	50
5	BT345AT	Bioprocess Calculations	3	0	0	3	BT	Theory	100	***	3	100	***
6	BT246XT	Professional Core Electives Group B	2	0	0	2	BT	NPTEL	50	***	***	50	***
7	HS247XL	Ability Enhancement Course- Group C	0	0	2	2	HSS	Lab	***	50	2	***	50
8	HS248AT	Universal Human Values	2	0	0	2	HSS	Theory	50	***	2	50	***
9	MAT149DT	Bridge Course: Mathematics	2 (A)	1	0	AUDIT	MA	Theory	50	***	***	***	***
Total						23							



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Group A: Basket Courses (Students can select any ONE COURSE out of THREE COURSES in ODD Sem & ONE COURSE out of remaining courses in EVEN Sem)								
2	CV	CV232AT	Environment & Sustainability	3	0	0	3	Theory
	ME	ME232AT	Material Science for Engineers	3	0	0	3	Theory
	BT	BT232AT	Bio Safety Standards and Ethics	3	0	0	3	Theory

GROUP B: PROFESSIONAL CORE ELECTIVES (NPTEL COURSES)- Courses are subject to change based on the availability of courses in NPTEL platform			
Sl. No.	Course Code	Course Title	Duration
1	BT246AT	Computational neuroscience	8 Weeks
2	BT246BT	Environmental biotechnology	8 Weeks
3	BT246CT	Experimental biotechnology	8 Weeks
4	BT246DT	Introduction to developmental biology	8 Weeks
5	BT246ET	Introduction to dynamical models in biology	8 Weeks

Group C: Ability Enhancement Courses During III Sem: AS, CH, CV, EC, EE, EI, ET, IM & ME. During IV Sem: AI, BT, CD, CS, CY & IS.					
Sl. No.	BoS	Course Code	Course Title	Category	Credits
7	HS	HS247AL	National Service Scheme	LAB	2
	HS	HS247BL	National Cadet Corps	LAB	2
	HS	HS247CL	Physical Education : Sports & Athletics	LAB	2
	HS	HS247DL	Music	LAB	2
	HS	HS247EL	Dance	LAB	2
	HS	HS247FL	Theater (Light Camera & Action)	LAB	2
	HS	HS247GL	Art Work & Painting	LAB	2
	HS	HS247HL	Photography & Film Making	LAB	2



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V SEMESTER														
Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21HS51B	Principles of Management & Economics	3	0	0	3	HSS	Theory	1.5	100	****	3	100	****
2	21BT52	Bioinformatics	3	0	1	4	BT	Theory+Lab	1.5	100	50	3	100	50
3	21BT53	Genetic Engineering	3	0	1	4	BT	Theory+Lab	1.5	100	50	3	100	50
4	21BT54	Microbial Biotechnology	3	0	1	4	BT	Theory+Lab	1.5	100	50	3	100	50
5	21BT55BX	Professional Core Elective-I (Group B)	3	0	0	3	BT	Theory	1.5	100	****	3	100	****
6	21BT56CX	Professional Core Elective-II (Group C)	2	0	0	2	BT	NPTEL	1.5	50	****	2	50	****
7	21BT157	Summer Internship - II	0	0	2	2	BT	Internship	1	****	50	2	****	50
Total						22								

7/2



GROUP-B		
Sl. No.	Course Code	Course Title
1	21BT55B1	Pharmaceutical Biotechnology
2	21BT55B2	Agricultural Biotechnology
3	21BT55B3	Plant Utilities And Biosafety In India
4	21BT55B4	Systems Biology
5	21BT55B5	Enzyme Technology

GROUP-C		
Sl. No.	Course Code	Course Title
1	21BT56C1	Introductory mathematical methods for biologists
2	21BT56C2	Bioengineering: an interface with biology and medicine
3	21BT56C3	Biointerface engineering
4	21BT56C4	Data analysis for Biologists
5	21BT56C5	Nano technology in agriculture



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VI SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21HS61A	Intellectual Property Rights & Entrepreneurship	3	0	0	3	HSS	Theory	1.5	100	****	3	100	****
2	21BT62	Reaction Engineering	3	0	1	4	BT	Theory+Lab	1.5	100	50	3	100	50
3	21BT63	Plant & Animal Biotechnology	3	0	1	4	BT	Theory+Lab	1.5	100	50	3	100	50
4	21BT64DX	Professional Core Elective – III (Group D)	3	0	0	3	BT	Theory	1.5	100	****	3	100	****
5	21BT65EX	Professional Core Elective (Cluster Elective –Group E) (2 Courses under each Program)	3	0	0	3	BT	Theory	1	100	****	3	100	****
6	21IE6FX	Institutional Electives - I (Group F)	3	0	0	3	Respective BOS	Theory	1.5	100	****	3	100	****
						20								

7/2



GROUP-D		
Sl. No.	Course Code	Course Title
1	21BT64D1	Biomedical Instrumentation
2	21BT64D2	Food & Dairy Biotechnology
3	21BT64D3	Fermentation Technology
4	21BT64D4	Programming In Biotechnology
5	21BT64D5	Equipment Design And Drawing

GROUP-E		
Sl. No.	Course Code	Course Title
1	21BT65E1	Nanobiotechnology
2	21BT65E2	Nature Impelled Technologies
3	21CH65E1	Bioenergy Technology
4	21CH65E2	Hydrogen Technology
5	21CV65E1	Disaster Management
6	21CV65E2	Solid Waste Management

GROUP-F			
Sl. No.	Course Code	BoS	Course Title
1	21IE6F1	CH	Industrial Safety and Risk Management
2	21IE6F2	EE	Renewable Energy Systems
3	21IE6F3	IM	Systems Engineering
4	21IE6F4	ME/EC	Mechatronics
5	21IE6F5	MA	Mathematical Modelling
6	21IE6F6	ME	Industry 4.0 – Smart Manufacturing for The Future
7	21IE6F7	HSS	Industrial Psychology for Engineers
8	21IE6F8	IM	Elements of Financial Management
9	21IE6F9	HSS	Universal Human Values-II
10	21IE6F10	HSS	Human Machine Interface (Industry Offered Elective)