

Department of Biochemical Engineering and Biotechnology

Dept.: BIO ENG. & BIOT.
Ref. No.: 20...14...BBCE...359...
Date : ...05-2-2014...

February 05, 2014

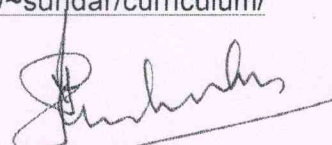
Sub : Minutes of the Expert Committee Meeting for New Academic Program in DBEB

The Expert Committee constituted by the Director to evaluate the proposed B.Tech program in the department met on January 31, 2014. The following documents are enclosed for your reference and further necessary action at your end:

- Minutes of the meeting of Expert Committee held on January 31, 2014 in the Committee Room of DBEB.
- Course credit structure of B.Tech and dual degree programs (Annexure I).
- Core and elective courses for B.Tech and dual degree programs (Annexure II).

The softcopy of this document is being emailed to Prof. M.R. Ravi (Associate Dean Academics - Curriculum)

The course templates are available in the DUGC page of our department and it can be accessed from the URL: <http://privateweb.iitd.ac.in/~sundar/curriculum/>


T.R. Sreekrishnan
Head

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Dean (Academics)

Department of Biochemical Engineering and Biotechnology

Minutes of the meeting of UG Curriculum Advisory Committee

January 31, 2014

The meeting of *Curriculum Advisory Committee* was held on **Friday, January 31, 2014 at 10 AM** in the Committee Room (I-230) of the Department.

The following members were present:

1. Prof. K. J. Mukherjee, School of Biotechnology, Jawaharlal Nehru University, New Delhi.
2. Dr. Asok Mukhopadhyay, National Institute of Immunology, New Delhi.
3. Dr. Rama Mukherjee, ARA Health Care, New Delhi
4. Prof. James Gomes, School of Biological Sciences, IIT Delhi
5. Prof. Saroj Mishra, DBEB, IIT Delhi
6. Prof. T.R. Sreekrishnan, Head, DBEB, IIT Delhi

One of the Advisory Committee members Prof. K.B. Ramachandran of the Department of Biotechnology at IIT Madras joined the meeting via Skype.

The departmental faculty was also invited to participate in the deliberations of the meeting.

Prof. T.R. Sreekrishnan, Head, DBEB welcomed all the Advisory Committee members to the meeting. After the brief introduction to the Senate approved Institute Concept Paper on Curriculum Review, the agenda items listed were taken up for discussion and the following resolutions were passed:

Item No. 1 - Proposal for new program in B.Tech in Biochemical Engineering and Biotechnology.

The members discussed the details regarding the proposal from DBEB to start a B.Tech program in Biochemical Engineering and Biotechnology.

The Committee recommended the change in part of the dual degree seats currently being offered by the Department to a 8 semester B.Tech program in Biochemical Engineering and Biotechnology as proposed by the department for implementation starting the academic year 2014-2015. The number could be 38 B.Tech and 10 Dual Degree if total intake is 48 and 45 B.Tech and 15 Dual Degree if the total intake becomes 60.

Item No. 2 - Course Credit Structure for the B.Tech program in Biochemical Engineering and Biotechnology.

The Committee recommended changing the title of some courses and enriching the bouquet of electives by addition of new courses. The Committee also suggested that the department should look at the possibility of offering specializations.

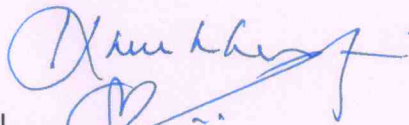
The Committee resolved to recommend to the senate for approval of the revision of Course Credit Structure proposed by the DBEB for implementation in the B.Tech and dual degree curriculum

Rm *Dr. Mukherjee* *SS* *Dr. Asok* *Dr. Rama*

(Annexure I). It was also resolved to recommend to Senate for approval of the Core and Elective Courses (Annexure II).

The meeting ended with thanks to all the members.

1. Prof. K. J. Mukherjee, JNU



2. Dr. Asok Mukhopadhyay, NII



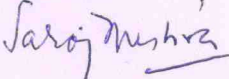
3. Dr. Rama Mukherjee, ARA Health Care, New Delhi



4. Prof. James Gomes, SBS, IIT Delhi



5. Prof. Saroj Mishra, DBEB, IIT Delhi



T.R. Sreekrishnan
Head, DBEB

From: "Ramachandran K B" <kbram@ITM.AC.IN>
Subject: RE: Minutes of today's meeting...
Date: Sat, February 1, 2014 3:32 pm
To: "sundar@dbeb.iitd.ac.in" <sundar@dbeb.iitd.ac.in>
Cc: "TR Sreekrishnan" <sreekrishnan_t_r@hotmail.com>

Dear Sreekrishanan,

I approve the minutes of the meeting.

I have the following comments to add

I strongly suggest that you keep the option for the entire batch of students to migrate from B.Tech to M.Tech program. in my opinion M.Tech is a better option for the students if they want to work in core Biotechnology Industries or in Biotechnology Research.

I also feel that some specialised courses to reflect the advances taken place in Biotechnology and Biochemical Engineering in the recent years should be included in the curriculum. In order to impart these new developments, you can offer a bunch of specialised courses to be taken as elective courses by the students. It can include courses like Systems and Synthetic biology, Metabolic Engineering, Biomaterials, Biomedical Devices and Instrumentation, Nano Biotechnology etc.

With best regard,

Ramachandran

K.B.Ramachandran
Professor Emeritus
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Tel: ++ 91-44-2257 4118 Email: kbram@iitm.ac.in

From: Dr. D. Sundar [sundar@dbeb.iitd.ac.in]
Sent: 31 January 2014 15:09
To: Ramachandran K B
Cc: TR Sreekrishnan
Subject: Minutes of today's meeting....

Dear Prof. Ramachandran,

Please find attached the minutes of UG Curriculum Advisory Committee meeting held today. The comments of the members have been incorporated and they have also signed on the minutes. We request you to go through and send us your comments by return email. Thanks.

Regards,
Sundar

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Annexure - I

Course Credit Structure

B.Tech in Biochemical Engineering and Biotechnology

Course Category	Credits
Basic Sciences (BS)	22
Engineering Arts and Science (EAS)	18
Humanities and Social Sciences (HuSS)	15
Department linked EAS	11
Departmental Core	69
Departmental Electives	10
Open Category	10
Total Graded Credit requirement	155
+ Non Graded Credits	15

Dual Degree (B.Tech + M.Tech) in Biochemical Engineering and Biotechnology

Component	Course Category	Credits
B.Tech	Basic Sciences (BS)	22
	Engineering Arts and Science (EAS)	18
	Humanities and Social Sciences (HuSS)	15
	Department linked EAS	11
	Departmental Core	66 *
	Departmental Electives	10
	Open Category	10
	Total Graded Credit requirement (B.Tech part)	152 *
	+ Non Graded Credits	15
M.Tech	Program Core	32
	Program Electives	16
	Total Graded Credit requirement (M.Tech part)	48
Total Graded Credit requirement (for the dual degree - B.Tech + M.Tech)		200

* Those students who join the dual degree program from JEE or those who choose to pursue a M.Tech degree along with their B.Tech program, will not be required to do the BTP Project of 3 credits as part of the Departmental core requirement.

Annexure - II

Courses for the B.Tech and dual degree programs

Courses under department linked EAS

Sl.	Category	Course Number	Course Title	L-T- P Structure			Credits
				L	T	P	
1	EAS	AML120	Introduction to Material Science and Engineering	3	0	2	4
2	EAS	CHL110	Transport Phenomena	3	1	0	4
3	BS	MAL235	Differential Equations	3	0	0	3
Sub Total							11

Departmental Core Courses

	Old Course Number	New Course Number	Course Title / Revised Course Title	L - T - P Structure			Credits
				L	T	P	
1		BED411	Major Project Part 1 (BB1)	0	0	6	3
2	BEL101	BEL131	Principles of Biochemistry	3	0	3	4.5
3	BEL102	BEL132	Mass and Energy Balances in Biochemical Engineering	3	0	0	3
4	BEL103	BEL133	General Microbiology	3	0	3	4.5
5	BEL401	BEL135	Bioprocess Technology	2	0	0	2
6	BEL301	BEL331	Bioprocess Engineering	3	0	0	3
7	BEL302	BEL332	Fluid Solid Systems	2	0	0	2
8	BEL403	BEL334	Enzyme Science & Engineering	3	0	2	4
9	BEL204	BEL336	Molecular Biology and Genetics	3	0	3	4.5
10	BEL418	BEL431	Bioinformatics	2	0	2	3
11	BEL702	BEL731	Bioprocess Plant Design	3	0	2	4
12	BEL703	BEL733	Bioseparation Engineering	3	0	3	4.5
13	BEL711	BEL735	Recombinant DNA Technology	2	0	3	3.5
14	BEP303	BEP333	Bioprocess Engineering Laboratory	0	0	3	1.5
15	New Course	CHL???	Heat Transfer for Chemical Engineers	3	1	0	4
16	New Course	CHL???	Mass Transfer	3	0	0	3
17	New Course	CHL???	Chemical Engineering Laboratory - I	0	0	3	1.5
18	New Course	CHL???	Chemical Engineering Laboratory - II	0	0	3	1.5
19	CHL122	CHL???	Chemical Reaction Engineering (CRE) - I	3	1	0	4
20	CHL231	CHL???	Fluid Mechanics for Chemical Engineers	3	1	0	4
21	CHL261	CHL???	Process Dynamics and Control	3	1	0	4
GRAND TOTAL of Departmental Core							69

Departmental Elective Courses

	Old Course Number	New Course Number	Course Title / Revised Course Title	L - T - P Structure			Credits
				L	T	P	
1	BED350	BED350	Mini Project (BB)	0	0	6	3
2		BED412	Major Project Part 2 (BB1)	0	0	16	8
3	BEL311	BEL340	Physical and Chemical Properties of Biomolecules	2	1	0	3
4	BEL312	BEL341	Carbohydrates and Lipids in Biotechnology	2	1	0	3
5	BEL411	BEL440	Food Science and Engineering	3	0	0	3
6	BEL412	BEL441	Immunology	3	0	2	4
7	BEL413	BEL442	Modeling and Simulation of Bioprocesses	3	0	2	4
8	BEL415	BEL443	Advanced Bioprocess Control	3	0	0	3
9	BEL416	BEL444	Membrane Applications in Bioprocessing	3	0	0	3
10	BEL417	BEL445	Biophysics	3	0	0	3
11	BEL419	BEL446	Enzyme Catalyzed Organic Synthesis	2	0	2	3
12	New Course	BEL447	Environmental Biotechnology	3	0	0	3
13	BER350	BER350	Professional Practices (BB)	0	1	2	2
14	BES350	BES350	Independent Study (BB)	0	3	0	3
15	BEV330	BEV330	Special Module in Biochemical Engineering and Biotechnology	1	0	0	1
16	CHL277	CHL???	Materials of Construction	3	0	0	3
17	CHL332	CHL???	Fluidization Engineering	3	1	0	4
18	CHL392	CHL???	Polymer Science and Engineering	3	1	0	4

Program Core Courses

	Old Course Number	New Course Number	Course Title / Revised Course Title	L - T - P Structure			Credits
				L	T	P	
1	BEL421	BEL732	Metabolic Regulation and Engineering	3	0	0	3
2	BEL722	BEL734	Genomics and Proteomics	2	0	2	3
3	BEL713	BEL737	Dynamics of microbial systems	3	0	0	3
4	BEL420	BEL739	Instrumentation and Analytical Methods in Bioengineering	2	0	2	3
5	BED851	BED851	Major Project Part 1 (BB5)	0	0	12	6
6	BED852	BED852	Major Project Part 2 (BB5)	0	0	28	14
7	BED853	BED853	Major Project Part 1 (BB5)	0	0	8	4
8	BED854	BED854	Major Project Part 2 (BB5)	0	0	32	16
9			Seminar	1	0	0	NC
GRAND TOTAL of Program Core							32

Program Elective Courses

	Old Course Number	New Course Number	Course Title / Revised Course Title	L - T - P Structure			Credits
				L	T	P	
1	BEL712	BEL740	Plant Cell Technology	2	0	2	3
2	BEL714	BEL741	Protein Science and Engineering	3	0	0	3
3	BEL715	BEL742	Biological Waste Treatment	3	0	2	4
4	BEL716	BEL743	High Resolution Methods in Biotechnology	2	0	2	3
5	BEL717	BEL744	Animal Cell Technology	3	0	2	4
6	BEL718	BEL745	Combinatorial Biotechnology	3	0	0	3
7	BEL719	BEL746	Current Topics in Biochemical Engineering and Biotechnology	3	0	0	3
8	BEL721	BEL747	Bionanotechnology	3	0	0	3
9	BEL723	BEL748	Data Analysis for DNA Microarrays	3	0	2	4
10	New Course	BEL749	Cancer Cell Biology	3	0	3	4.5
11	New Course	BEL750	Genome Engineering	2	0	2	3

Elective Course for non-DBEB students

	Old Course Number	New Course Number	Course Title	L - T - P Structure			Credits
				L	T	P	
1	BEL110	BEL110	Molecular Biotechnology	3	0	0	3