

Department of Biochemical Engineering and Biotechnology

Faculty Board Meeting (1/15-16)

Dated: 25th July 2015

Minutes of the 1st Departmental Faculty Board Meeting held on 24th July 2015 at 3.30 pm in the Departmental Committee Room (I-230). Following members were present:

1.	Prof. Prashant Mishra	Chairman
2.	Prof. V. S. Bisaria	Member
3.	Prof. Saroj Mishra	Member
4.	Prof. T.R. Sreekrishnan	Member
5.	Prof. A. K. Srivastava	Member
6.	Prof. Sunil Nath	Member
7.	Prof. P. K. Roychoudhury	Member
8.	Prof. Atul Narang	Member
9.	Dr. D. Sundar	Member
10.	Dr. Shilpi Sharma	Member
11.	Dr. Ritu Kulshreshtha	Member
12.	Dr. Ravikrishnan Elangovan	Member
13.	Dr. Z. Ahammad	Member
14.	Dr. Stefan Oehler	Member
15.	Dr. Preeti Srivastava	Convener

Head welcomed Dr. Stefan Oehler and informed the board about his joining as visiting faculty since July 1st 2015.

1. Confirmation of minutes of 8th DFB meeting (8/2014-2015)

The minutes were confirmed as circulated.

2. Matters arising out of above meeting

Item No. in FBM meeting 08/2014-15	Item	Decision taken	Action taken
4	Discussion on expenses to be covered from NPN05 for teaching and	Head decided to hold a meeting with faculty members who would be involved in	A meeting was held on 23 rd July, 2015.

	maintenance	conducting laboratories	
5	Discussion on teaching lab space in context of note received from DDO	The board expressed the need to revisit the calculations and decided that allocation space should be on the basis of "Sanctioned faculty strength".	Head communicated the same to concerned authorities.
6	Discussion on write-off of journals from departmental library	The list compiled by Ms. Neera required to be updated with details on the year from which journals are available online.	Updated list of journals with details has been prepared and will be circulated to faculty members with the online available papers
8	Nomination for B. M. Birla Science Prize in Biology	Dr Shilpi Sharma was nominated for the above award.	Head communicated the same to concerned authorities.
9	Training of attendant staff of the Institute	Mr Sanjeev and Mr Ratan were selected for training in electrical.	Head informed the board that Mr. Sanjeev and Mr. Ratan have been recommended for training in electrical. He also informed that recently Ratan has been transferred from the Department.
12	Note received from Dean Alumni Affairs to identify key/priority areas wherein contributions from Alumni is solicited.	Following key areas were identified (a)Enzyme Technology, b)Bioprocess Engineering, (c)Environmental Biotechnology	Head communicated the same to concerned authorities.
13	Discussion on MoU with Technical University of Denmark – DTU	Discussed in the board	Head communicated the same to concerned authorities.
14	Note received from Asst. Registrar regarding membership on the Senate.	The names proposed were: Prof. Akhilesh Tyagi, Director, NIPGR (Educationists of repute) Dr. D. Sundar (Staff for special knowledge)	Head communicated the same to concerned authorities.

3. Report on discussion in ECS, BAP, ACL, Safety and other Committee

Head informed the board that in the Senate meeting the Department's M.Tech program was approved. No other meetings were held.

4. Allotment of non-teaching duties to faculty members

Detailed in Annexure I.

5. Allotment of TAs for courses offered in current semester

Detailed in Annexure II & III.

6. Allotment of labs to M.Tech and Ph.D. students

Detailed in Annexure III and IV.

7. Discussion on PLN03

Head informed the board that the budget sanctioned for PLN03 is 70 lakhs. It was decided that the probes for bioreactors be purchased from the FIST grant. Revised list based upon the discussion is given in Annexure V.

8. Discussion on expenses to be covered from NPN05 for teaching and maintenance

Head informed the board that a meeting of the course coordinators of the courses having laboratory component in the current semester (Sem-I, 2015-16) was held on July 23rd, 2015 in the committee room of the Department. The names of the following staff members were proposed for different courses:

Mr. Sumit Kapoor : General Microbiology (BBL132) and Immunology (BEL 412)

Mr. Kishan & Mr Anish Raju : Biological Waste Treatment (BEL 715)

Mr. S.P. Rana & Mr. Anish Raju: Enzyme Engineering and technology (BEL 403), Design of Bioprocess (BBP 332), Advanced Biochemical Engineering (BEL 850)

Mrs. Renu Sethi : Principles of Biochemistry (BBL 131), Laboratory Techniques in Microbial Biochemistry (BEP 840)

A total of Rs. 30,000 will be available for the purchase of plastic wares and Rs 20,000 for the purchase of specific chemicals required for individual lab courses.

Board decided that in addition 4-5 lakhs will be made available for maintenance and repair of equipment.

9. Nomination of faculty members for NIN100 (Introduction to engineering) and NEN100 (Professional ethics and social Responsibility)

Dr. Ravikrishnan Elangovan and Prof. Atul Narang were nominated for NIN100 (Introduction to Engineering) course.

10. Comments / feedback on following proposal to float new course by Department of Applied Mechanics

- a) **APL 742 Impact Mechanics**
- b) **APL 802 Experimental Techniques**
- c) **APL 842 Projectile Design and Dynamics**

No comments were received

11. Any other item with the permission of the Chair

Head informed the board that Dr. Stefan Oehler will be sharing 50% of the Biochemistry laboratory, 1/3 of Microbial Biochemistry (BEL830) and 1/2 of Colloquium as detailed in Annexure VI.

The meeting ended with a vote of thanks to the Chair.

Preeti Srivastava
Convenor

All Faculty members

ANNEXURE I

Allocation of Non-Teaching duties to Faculty members during year 2015-2016

1.	Professorial Committee	HOD, Chairman All Professors, Member		
2.	DRC	Prof. Prashant Mishra (Chairperson & Head) Prof. T. R. Sreekrishnan Prof. V. S. Bisaria Prof. Saroj Mishra Prof. A. K. Srivastava Prof. Atul Narang Dr. D. Sundar Dr. Ritu Kulshreshtha Dr. Preeti Srivastava Dr. Shilpi Sharma (Convener)		
3. (a)	Coordinators: B.Tech Dual-Degree Program	Prof. T. R. Sreekrishnan		
(b)	Time table I/c	Dr. Z. Ahmmad		
(d)	Coordinator: Ph.D. & M.S. (Res.) Programme	Dr. S. Sharma (Ph.D.), Dr. R. Kulshreshtha (MSR)		
(e)	Coordinator: M.Tech. projects	Dr. S. Sharma		
(f)	Matters concerning Dual Degree Programme	Prof. T. R. Sreekrishnan, Dr. R. Kulshreshtha		
4.	Convener, Dept. Faculty Board.	Dr. P. Srivastava		
5.	Training & Placement	Prof. A. Narang		
6.	Technical Services (Water, Power, Steam etc.) Additional power requirement / DG set / A/C	Prof. A. K. Srivastava Dr. R. Elangovan		
7.	Cold Rooms	Prof. G. P. Agarwal		
8.	Departmental Representatives to: BAP ACL CUC CAIC IRD Board Alumni Affairs Safety Committee Faculty Affairs EHLSU Institutional Biosafety Committee (IBSC)	Dr. D. Sundar, Prof. T. R. Sreekrishnan Dr. P. Srivastava / Prof. A. Narang* Prof. A. K. Srivastava / Dr. D. Sundar* Dr. R. Elangovan Prof. S. Mishra Dr. R. Elangovan Dr. Z. Ahammad Dr. D. Sundar Dr. Z. Ahammad Dr. P. Srivastava (Member Secretary) Prof. S. Mishra (member) * in case change is requested from the Institute		
9.	Seminars	Dr. R. Elangovan		
11.	Imprest	Dr. P. Srivastava, Mrs Neelam		
12.	Dept. / Institute Publications / Reports / Maintenance of website	Prof. P. Mishra (Head), Dr. D. Sundar, Dr. R. Elangovan, Dr. Z. Ahammad		
13.	Class Committee:			
	Entry year	Chairperson	Convenor	Member
	2011	Dr. D. Sundar	Dr. R. Elangovan	Prof. V. S. Bisaria

	2012	Prof. A. Narang	Dr. P. Srivastava	Prof. T. R. Sreekrishnan
	2013	Prof. P. Mishra	Dr. Z. Ahmmad	Prof. Sunil Nath
	2014	Prof. S. Mishra	Dr. D. Sundar	Prof. A. K. Srivastava
	2015	Prof. G. P. Agarwal	Dr. S. Sharma	Prof. P. K. Roychoudhury
	Special advisor for students on probation		2011 & before (dual) Dr R. Kulshreshtha 2012 Ziauddin Shaikh 2013 Ziauddin Shaikh 2014 Ravi Elangovan 2015 Ravi Elangovan	
14.	Curriculum Monitoring & Development Cell		Prof. T. R. Sreekrishnan (Chairperson), Prof. G. P. Agarwal, Prof. S. Mishra, Prof. A. Narang, Dr R. Kulshreshtha (Convenor)	
15.	Biochemical Engineers & Technologists Association		President: Head, DBEB Vice President: Dr. D. Sundar General Secretary: to be nominated	
16. Laboratory Organization				
<u>16.1.100 - Level Floor</u>		I/C		Staff Members
a) Bioprocess Lab. (I-103)		Prof. G.P. Agarwal and Dr. Z. Ahammad		Mr. Anish Raju, Mr Sanjeev
b) Downstream Processing Lab. (I-127)		Prof. G. P. Agarwal		Mr. Kishan Chand, Mr. Sanjeev
c) Metagenomics Lab. (I-128)		Dr. Shilpi Sharma		Mr. Kishan Chand, Project Attendant
d) Waste Treatment Lab. (I-121)		Dr. Z.A. Shaikh		Mr. Kishan Chand, Mr Sanjeev
<u>16.2.200 - Level Floor</u>				
a) Biochem. Res. Laboratories		Prof. S. Mishra, Prof. P. Mishra		Mr. Sumeet Kapoor, Project Attendant
d) Radioactive & Photography Lab.		Prof. A. Narang		Mr. Mukesh Anand
e) Molecular Modeling Lab (I – 232)		Dr. D. Sundar		Mr Sanjeev
f) BTIS (I-233 A)		Dr. D. Sundar		Mr Sanjeev
g) Bioinformatics Lab (I-233 B)		Dr. D. Sundar		Mr Sanjeev
h) Instrumentation Labs. (I-233 C) (I-231)		Prof. G. P. Agarwal, Dr. Z. Ahmmad		Mr. Mukesh Anand, Mr. Rajiv Dahiya, D/W Attendant
j) COE lab (I-232 A)		Prof. A. K. Srivastava		Mukesh Anand, Project Attendant
k) Documentation Unit		Prof. P. Mishra (Head)		Mrs. Neera Verma D/W Attendant
<u>16.3 300 - Level Floor</u>				
a) Enzyme Engg. Lab & Enzyme Process Lab. (I-329 & 337)		Prof. P. Mishra		Mrs. Renu Sethi, D/W Attendant
b) Molecular Machines & Bioenergetics		Prof. S. Nath,		Mrs. Renu Sethi, D/W

Laboratory	Dr. R. Elangovan	Attendant
c) M. Tech. Bioscience Lab. I (I-321)	Prof. P. Mishra	Mrs. Renu Sethi, D/W Attendant
<u>16.4. Pilot Plant Block</u>		
a) Pilot Plant Floor I	Prof. T.R. Sreekrishnan	Mr. Sant Ram, Project Attendant
<u>Ground Level Rooms.</u>		
b) UG Teaching lab A and B	A : Engg : Dr. Ravi Elangovan B: Dr. S.Sharma	Mr. S.P. Rana/Mr. Sita Ram (A/N), Mr. Soraj Singh
c) Computation Lab. (I-132)	Prof. A. Narang	Mr. Soraj Singh
d) Bioscience Lab II (I-130)	Prof. A. Narang, Dr Ritu Kulshreshtha	Mr. R.K. Dahiya, Proj. Attendant
e) RNA Laboratory-II	Dr. R. Kulshreshtha, Prof. A. Narang	Mr. R.K. Dahiya, Proj. Attendant
Faculty Rooms at 100 Level Floor & in Pilot Plant Block		
f) Plant Cell Culture Lab. I (I-27)	Prof. A. K. Srivastava	Mr. S. P. Rana, Mr. Soraj Singh
g) Plant Cell Culture Lab II (I-24)	Prof. A. K. Srivastava	Mr. S. P. Rana Mr. Soraj Singh
h) Pharmaceutical Biotechnology Lab (I-25)	Prof. V. S. Bisaria, Prof. A. K. Srivastava	Mr. Soraj Singh
i) RNA Lab-I (I-26)	Dr. P. Srivastava	Mr. Soraj Singh
j) Animal Cell Culture Lab. (I-32)	Prof. P. K. Roychoudhury, Dr. Ritu Kulshreshtha	Mr. S. P. Rana / Project Attendant
<u>16.5 Other Facilities</u>		
a) Office Complex I/C Head, DBEB	Coordinator: Head, DBEB	Mrs. Neelam, Mr. Sita Ram (F/N), D/W Attendant
b) Seminar Room I/C	Coordinator: Head, DBEB	D/W Attendant
c) Committee Room	Coordinator: Head, DBEB	D/W Attendant
d) Stores	Head	Mr. Inderjeet

ANNEXURE II

Allotment of TAs to Ph.D. and M.S. (R) students (Semester I, 2015-2016)

Course / Faculty / Lab	Student
BBL 131	Sanjay Singh
	Sakshi Agarwal
	Tanaya Bagga
BBL 132	Richa Sharma
	Gautam Anand
	Varsha A. Walvekar
BBL133	Siddhi
	Pravita Singh
	Vishal Bhagar
BBP 332	Ashwani Gautam
	Sunil Kumar
	Shudhodana
BEL 403	Gaurav Mallik
	Vidhu
BEL 412	Sonam Takkar
	Omkar Suhas Vinchure
	Ankita
BEL715	Ashish Lohar
BEL 840	Garima Goyal
BEL 850	Manisha Lamba
BEL722	Pooja Murarka
BEL413	Jitendra Singh Verma
BBL110	Ankur Kumar
	Aakansha Gautam
WTL	Manisha Lamba
Enzyme Engg Lab	Sanjay Singh, Surbhi Goel
Molecular Modelling Lab	Jaspreet Kaur Dhanjal
Protein Engg Lab	Neeti
RNA II	Anamika Singh, Ritesh Kumar Aggarwal
Pilot Plant	Shraddha Maitra, Ashwani Gautam
DSP Lab	Satyendra Singh, Sunil Kumar
BRL	Arpita
Process Lab	Lovely
Plant Cell Culture Lab	Anveshika
Metagenomics	Gautam
RNA I	Ankur Kumar
Molecular Machines	Khushboo Rastogi

ANNEXURE III

Allotment of lab and TAsip to final year dual degree students (Semester I, 2015-2016)

S.No	Entry #	Student	Supervisor(s)	Lab allotted	TA ship
1	2011BB50001	Amit Prakash	GP Agarwal	Process lab	BEL416
2	2011BB50002	Amit Kumawat	Prashant Mishra	Enzyme Engg	PM
3	2011BB50003	Anandu S Mukundan	Ravikrishnan E	Molecular Machines	NIN100
4	2011BB50004	Anirudh Mittal	Ziauddin Ahammad	WTL	BEL715
5	2011BB50005	Anshika Gupta	Ritu Kulshreshtha	RNAII	BEL412
6	2011BB50006	Archit Raj	AK Srivastava	Plant Cell Culture	Plant cell culture lab
7	2011BB50007	Ashish Nain	Ravikrishnan E	Molecular Machines	BEL403
8	2011BB50008	Ashish Gangwar	GP Agarwal	DSP	BEL416
9	2011BB50009	Ashutosh Mishra	AK Srivastava	Plant cell culture	Plant cell culture lab
10	2011BB50010	Atul Choudhary	Shilpi Sharma	Metagenomics	SS
11	2011BB50011	Avantika Choudhary	Saroj Mishra	BRL	BEL830
12	2011BB50012	Avinash K. Bharti	Atul Narang	RNAII	AN
13	2011BB50014	Charul Agrawal	Ritu Kulshreshtha	RNAII	BEL412
14	2011BB50015	Chhavi Gupta	AK Srivastava	Plant cell culture	BEL413
15	2011BB50016	Devesh Mohnot	VS Bisaria	Pilot Plant	BEL810
16	2011BB50017	Gaurav Ghosh	GP Agarwal	DSP	BEL416
17	2011BB50018	Girish Mittal	TR Sreekrishnan	WTL	BEL715
18	2011BB50019	Inukurthi Manoj	GP Agarwal	WTL	BBL132
19	2011BB50021	Jitender Kumar	Saroj Mishra	BRL	BEL714
20	2011BB50022	Jyoti	Z. Ahammad	WTL	ZA
21	2011BB50023	Kalki Kukreja	Ravikrishnan E	Molecular Machines	BEL403
22	2011BB50024	Kokkula Prashanth	Preeti Srivastava	RNAI	BBL110
23	2011BB50025	Komal Saini	AK Srivastava	Plant cell culture	BEL413
24	2011BB50027	Md Aamir Meraj	Preeti Srivastava	RNAI	BBL110
25	2011BB50028	Meghank Garg	AK Srivastava	Process lab	BEL413
26	2011BB50030	Ms Anita Bai Meena	GP Agarwal	DSP	BEL416
27	2011BB50031	Nikita Gupta	TR Sreekrishnan	WTL	BEL715
28	2011BB50032	Parth Garg	TR Sreekrishnan	WTL	BEL715
29	2011BB50033	Payal Jawalkar	MN Gupta Prashant Mishra	PEL	BBL131
30	2011BB50035	Rahul Kumar	Sunil Nath	Molecular Machines	SN
31	2011BB50036	Saorabh Kumar	Prashant Mishra	PEL	BEP840
32	2011BB50037	Shashank Karnawat	Z. Ahammad	WTL	BEL715
33	2011BB50038	Siddhant Malviya	Preeti Srivastava	RNAI	BBL110
34	2011BB50042	Varsha Kumari	Atul Narang	RNAII	BBL331
35	2011BB50043	Vikrant Mehta	Prashant Mishra	PEL	BEP840
36	2011BB50044	Vinayak Maheshwari	Shilpi Sharma	Process lab	BBL132
37	2011BB50045	Vinayak Shandilya	Prashant Mishra	Enzyme Engg	PM
38	2011BB50046	Vishal Sanduja	VS Bisaria	Pilot Plant	NIN100
39	2011BB50047	Yogita Meena	VS Bisaria & SS	Pilot Plant	BBL110

ANNEXURE IV

Lab allotment to departmental PhD students (2014 entry)

S. No.	Reg #	Student	Supervisor	Lab
1	bez148264	Aditya Prakash Soni	ZA	WTL
2	bez148265	Pooja Murarka	PS	RNA I
3	bez148266	Raju Kumar	AKS	Process lab
4	bez148267	Vidhi Malik	DS	Molecular Modeling
5	bez148391	Sonia Gupta	ZA	WTL

Annexure – V

S. No	Item	Cost (Rs Lakhs)	Location of proposed equipment	Faculty members involved	Purpose (Research / Teaching Labs) (List of Course Nos)
1	One Water circulator	2.5	DSP/Process Lab/WTL	GPA	BED851-854, BEL820
2	5 pH meters	2.6	DSP, UG lab	GPA, RK,SS, RE	BED851-854, BEL820
3	Inverted fluorescence Microscope	12	Animal Cell Culture lab	RK,PKRC, PM	BEL412,BEL717,
4	Laminar flow	2	Animal Cell Culture Lab	RK,PKRC, PM	BEL412,BEL717,
5	UV Vis Spectrophotometer	5	M.Tech Bioscience Lab	PM,MNG,SM	BEL 840 BEL 716, BEL 419
6	pH Stat	2	M.Tech Bioscience Lab	PM, MNG, SM	BEP840
7	pH probe applikon fermenter	0.7	Enzyme Engineering lab	PM,MNG	BEL 840, BEL716, BEL 419
8	Weighing Balance	3	M.Tech Bioscience Lab	PM,SM,MNG	BEL 840, BEL 716, BEL 419
9	Three weighing balance	2.0	DSP, New teaching lab	GPA, RK,SS, RE	BED851-854, BEL820
10	2 Stirred Cell	2.0	UG & PG Lab	GPA,SN, ZAS	BED851-854, BEL820
11	2 Rayflow	2.0	UG & PG Lab	GPA,SN, ZAS	BED851-854, BEL820
12	(2)UV-VIS Spectrophotometer	5.0	UG Lab	AKS, ZA,PKRC, SC, GPA	All UG Courses
13	1 General purpose centrifuge Sorvall	15	Instrumentation lab	AKS, ZA, PKRC, SC, GPA, SM, PM, SS, PS	BED851-854
14	1 Chilled water circulation unit Julabo	1.0	Bioprocess lab,	ZA, PKRC, SC, GPA, VSB	BEL712
15	3 pipette sets	1.8	UG lab	SS, RE	BBL131, BBL132
16	Sonicator	0.5	Bioprocess lab	GPA,AKS, ZA, PKRC, SC	BED851-854
17	1 Air compressor for supply of air	1.5	I-24 to I-27, Pilot plant, Down-stream processing unit, New teaching lab	TRS	BED851-854
18	Steam Generator	1.5	Pilot plant Lab (I-231)	AKS, VSB	BED851-854
19	Magnetic stirrer-2 6 x magnetic stirrer	(Rs. 8000/ per	New teaching lab(UG lab)	RK,SS, RE, ZAS.	BBP303, BEL850

	and hot plate	unit) 0.48			
20	Refrigerators-4	2.0	BRL Lab, EE, WTL, RNAI	SM,PM,SS,TRS,ZAS	BEL715, BED851- 854, BEL750
21	Western blotting apparatus	2.0	UG lab	DS,PS	BEL722
22	Desktop computers-8	3.0	For different labs and instrument	SM,PM,SS	BED851-854
23	-20 degrees freezer-1	1.5	BRL	SM,PM,SS	BED851-854
24	Vortex mixer-5	0.5	BRL, UG lab	SM,PM,SS,PS, RE,RK, VSB	BED851-854
25	4 Low voltage power pack	1.4	BRL, UG lab	SM,PM,SS	BED851-854, BEL204
26	2Dry baths	1.5	UG lab, Metagenomics, RNA-I	SS, TRS, ZA, PS	BEL204. BEL103, BEL750
27	1 Flexiglass shield	0.4	Radioactivity lab	AN	BED851-854
28	Computer	3.0	DBEB Computer Cluster	All	BED851-854
	Total	77.88 lakhs			

Annexure – VI

Courses to be offered by DBEB in 1st Semester 2015-16

Slot	Course Code	Description	Course Credits	L	T	P	Coordinator/ Associated Faculty
D	BBL131	PRINCIPLES OF BIOCHEMISTRY	4.5	3	0	3	PM / MNG/SO*
B	BBL132	GENERAL MICROBIOLOGY	4.5	3	0	3	VSF / SS
H	BBL133	MASS AND ENERGY BALANCES IN BIOCHEMICAL ENGINEERING	3.0	3	0	0	ZAS
D	BBL110	MOLECULAR BIOTECHNOLOGY	3.0	3	0	0	SS / PS
B	BBL331	BIOPROCESS ENGINEERING	3.0	3	0	0	AN
E	BEL403	ENZYME ENGINEERING AND TECHNOLOGY	4.0	3	0	2	RE
H	BEL412	IMMUNOLOGY (DE 1)	4.0	3	0	2	RK
F	BEL413	MODELLING AND SIMULATION OF BIOPROCESSES (DE 2)	4.0	3	0	2	AKS
H	BEL416	MEMBRANE APPLICATIONS IN BIOPROCESSING (DE 3)	3.0	3	0	0	GPA
H	BEL701	BIOTECHNOLOGY RESOURCE PLANNING AND IPR ISSUES (PE5)	2.0	2	0	0	PM / SC
D	BEL714	PROTEIN SCIENCE AND ENGINEERING (PE 3)	3.0	3	0	0	SM / DS
D	BEL715	BIOLOGICAL WASTE TREATMENT (PE 1)	4.0	3	0	2	TRS
J	BEL722	GENOMICS AND PROTEOMICS (PE 2)	3.0	3	0	0	DS / PS
J	BEL810	ENZYME AND MICROBIAL TECHNOLOGY	3.0	3	0	0	VSF (2/3) / SC (1/3)
H	BEL820	DOWNSTREAM PROCESSING	3.0	3	0	0	SN
E	BEL830	MICROBIAL BIOCHEMISTRY	3.0	3	0	0	SM/SO (1/3)
F	BEL850	ADVANCED BIOCHEMICAL ENGINEERING	5.0	3	0	4	ZAS / TRS
F	BBP332	DESIGN OF BIOPROCESSES	2.5	0	1	3	SN/**
P	BEP840	LAB.TECH.IN MICROBIAL BIOCHEMISTRY	2.0	0	0	4	PM
NM	BBN101	INTRODUCTION TO BIOCHEMICAL ENGINEERING AND BIOTECHNOLOGY	1.0	0	0	2	PM /OTHER FACULTY
P	BES350	INDEPENDENT STUDY (BB)	3.0	0	3	0	PM
P	BEC450	COLLOQUIUM (BB)	3.0	0	3	0	RE/SO
P	BED800	MAJOR PROJECT	40.0	0	0	80	RK
P	BED851	MAJOR PROJECT PART 1 (BB)	6.0	0	0	12	SS
P	BED852	MAJOR PROJECT PART 2 (BB)	14.0	0	0	28	SS
P	BED853	MAJOR PROJECT PART 1 (BB)	4.0	0	0	8	SS
P	BED854	MAJOR PROJECT PART 2 (BB)	16.0	0	0	32	SS

* 50% Biochemistry Laboratory

** another faculty to be decided