SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
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SCHOOL OF BIO AND CHEMICAL ENGINEERING

DEPARTMENT OF BIOINFORMATICS

BOARD OF STUDIES - MINUTES OF MEETING

Subject: Board of Studies- Department of Bioinformatics
Venue: Molecular Modelling Lab
Date: 26/06/2020
Agenda: Opinion/suggestion for improvement of syllabus

External member

      Dr. C Elizabeth Rani Junius, HoD, Department of Biotechnology,
                                      Hindustan College of arts & science, Chennai

Internal members

1. Dr. Wilson Aruni – Pro Vice Chancellor, Sathyabama Institute of Science and Technology
2. Dr. Jemmy Christy – Assistant Professor, Department of Bioinformatics Sathyabama Institute of Science & Technology
3. Dr. Swetha Sunkar - Assistant Professor, Department of Bioinformatics Sathyabama Institute of Science & Technology
4. Dr. Daniel Alex Anand, Associate Professor, Department of Bioinformatics Sathyabama Institute of Science & Technology
5. Dr. Ramesh Kumar, Associate Professor and head, Biotechnology Department

The BOS meeting has been conducted on **26/06/2020** (online mode) to review the syllabus for the Faculty of Bio & Chemical Engineering to be implemented from the Academic year 2019-20.

1. The Chairman Dr. **Wilson Aruni** greeted and welcomed all members of Board of Studies. The HoDs of Dept. of Biomedical Engg, Biotechnology, Bioinformatics, and Chemical Engineering.

2. The panel members suggested the lab in the first semester to include Cell Biology and Biochemistry instead of Biochemistry lab in line with the theory paper. Therefore the syllabus for the lab is also revised to include the basic experiments in both cell biology and biochemistry.

3. The board members appreciated the inclusion of certain papers like machine learning, python, R programing as core papers as they are rightly identified as the most important courses in the current scenario.

4. Enclosed the Curriculum for B.Sc and M.Sc Bioinformatics and Datascience

Curriculum:

PROGRAMME: BSC
BIOINFORMATICS AND DATA SCIENCE
CURRICULUM

S.no	Course type	Course code	Course Title	L	T	P	C	Marks		Page No
								CAE	ESE	
1	Theory	STA 1101 SFR1101 SHN1101	Tamil -I / French -I/ Hindi -I	3	0	0	3	50	50	7 9 10
2	Theory	SHSA1102	General English-I	3	0	0	3	50	50	11
3	Theory	SBIA1101	Introduction to Bioinformatics	3	0	0	3	50	50	13
4	Theory	SBIA1102	Cell Biology and Biochemistry	3	0	0	3	50	50	14
5	Theory	SBBA1101	Environmental Science	3	0	0	3	50	50	15
6	Practical	SBIA2101	Cell Biology and Biochemistry	0	0	4	2	50	50	17
7	Practical	SBIA2102	Biological databases Lab	0	0	4	2	50	50	17
Total credits for 1st Semester = 19										
Total marks for 1st Semester =700										

S.no	Course type	Course code	Course Title	L	T	P	C	Marks		Page No
								CAE	ESE	
1	Theory	STA 1102 SFR 1102 SHN 1102	Tamil -II / French -II/ Hindi -II /	3	0	0	3	50	50	19 21 22
2	Theory	SHSA 1201	General English -II	3	0	0	3	50	50	23
3	Theory	SBIA1201	Sequence Analysis	3	0	0	3	50	50	25
4	Theory	SMTA1105	Basic Statistics	3	0	0	3	50	50	26
5	Theory	SCSA1202	Programming in C and C++	3	1	0	3	50	50	28
6	Practical	SBIA2201	Sequence analysis Lab- I	0	0	4	2	50	50	29
7	Practical	SCSA2105	Problem solving techniques-Lab	0	0	4	2	50	50	29
Total credits for 2nd Semester = 19										
Total marks for 2nd Semester =700										

				Semester 3							
S.no	Course type	Course code	Course Title	L	T	P	C	Marks		Page No
								CA E	ESE	
1	Theory	SBIA1301	Molecular Biology and Genomics	3	0	0	3	50	50	32
2	Theory	SBIA1302	Evolutionary biology	3	0	0	3	50	50	33
3	Theory	SBIA1303	Proteomics and Interactomics	3	1	0	4	50	50	35
4	Theory	SBIA1304	Perl For Bioinformatics	3	0	0	3	50	50	36
5	Theory		Elective	3	0	0	3	50	50	
6	Practical	SBIA2301	Perl Lab	0	0	4	2	50	50	38
7	Practical	SBIA2302	Molecular biology Lab	0	0	4	2	50	50	38
Total credits for 3rd Semester = 20										
Total marks for 3rd Semester =700										

				Semester 4							
S.no	Course type	Course code	Course Title	L	T	P	C	Marks		Page No
								CA E	ESE	
1	Theory	SCSA1102	Fundamentals of Python Programing	3	0	0	3	50	50	40
2	Theory	SCSA1301	Database management system	3	0	0	3	50	50	41
3	Theory	SBIA1401	Structural biology	3	1	0	4	50	50	42
4	Theory	SBIA1402	Immunology and Immunoinformatics	3	0	0	3	50	50	43
5	Theory		Elective	3	0	0	3	50	50	
6	Practical	SCSA2102	Fundamentals of python programming lab	0	0	4	2	50	50	44
7	Practical	SBIA2401	Sequence analysis lab--II	0	0	4	2	50	50	44
8	PT	S738APT	Internship / Skill Development Training	0	0	2	1		100	
Total credits for 4th Semester = 21										
Total marks for 4th Semester =700										

				Semester 5							
S.no	Course type	Course code	Course Title	L	T	P	C	Marks		Page No
								CAE	ESE	
1	Theory	SBIA1501	Modelling of molecules	3	0	0	3	50	50	46
2	Theory	SBIA1502	Drug design and development	3	0	0	3	50	50	47
3	Theory	SBIA1503	Systems Biology	3	0	0	3	50	50	48
4	Theory	SBIA1504	Cheminformatics	3	0	0	3	50	50	50
5	Theory		Elective	3	0	0	3	50	50	
6	Practical	SBIA2501	Systems biology lab	0	0	4	2	50	50	51
7	Practical	SBIA2502	Cheminformatics and Drug design Lab	0	0	4	2	50	50	51
8	Seminar	S738ASEM	Seminar	0	0	0	1		100	
Total credits for 5th Semester = 20										
Total marks for 5th Semester =800										

				Semester 6							
S.no	Course type	Course code	Course Title	L	T	P	C	Marks		Page No
								CAE	ESE	
1	Theory	SBIA1601	Data mining and Machine Learning	3	0	0	3	50	50	53
2	Theory	SBIA1602	Microarray data analysis	3	0	0	3	50	50	55
3	Practical	S738APROJ	Project				15		100	
Total credits for 6th Semester = 21										
Total marks for 6th Semester =300										

Semester	Theory courses (including elective courses)			Practical Courses (including PT and project)		
	Total no.	Total Credits	Total Marks	Total no.	Total Credits	Total Marks
1	5	15	500	2	4	200
2	5	15	500	2	4	200
3	5	16	500	2	4	200
4	5	16	500	2	5	200
5	5	15	500	3	5	300
6	2	6	200	1	15	100
Overall Total	27	83	2700	10	37	1200

Overall total credits for B.Sc. programme	120
Overall total marks for B.Sc. programme	4000

L - LECTURE HOURS, T – TUTORIAL HOURS, P – PRACTICAL HOURS, C – CREDITS
CAE – CONTINUOUS ASSESSMENT EXAMINATION, ESE – END SEMESTER EXAMINATION,
VIVA – VIVA VOCE

PROFESSIONAL CORE ELECTIVES

Sl. No.	Course code	Course title	L	T	P	C	Marks CAE	ESE	Page No
1.	SBIA3001	Pharmacogenomics	3	0	0	3	50	50	58
2.	SBIA3002	Cancer Biology	3	0	0	3	50	50	59
3.	SCSA3016	Data Science	3	0	0	3	50	50	61
4.	SBIA3003	R Programing for Biologists	3	0	0	3	50	50	63
5.	SITA3008	Internet of Things	3	0	0	3	50	50	64
6.	SBIA3004	Next Generation Sequencing	3	0	0	3	50	50	65
7.	SBIA3005	Quantitative modelling in biology	3	0	0	3	50	50	67
8.	SBIA3006	Stem Cell Research	3	0	0	3	50	50	69
9.	SCSA3015	Deep Learning	3	0	0	3	50	50	70
10.	SCSA1501	Operating Systems	3	0	0	3	50	50	72
11.	SBIA3007	Bigdata in Health care	3	0	0	3	50	50	74
12.	SBIA3010	Health Informatics	3	0	0	3	50	50	75

PROGRAMME: M.Sc.
BIOINFORMATICS AND DATA SCIENCE

CURRICULUM

S. No.	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS CAE	ESE	PAGE No.
			SEMESTER-1							
1	Theory	SBIA5101	Structural and Functional Genomics	3	0	0	3	50	50	6
2	Theory	SBIA5102	Python for Biologists	3	0	0	3	50	50	7
3	Theory	SBIA5103	Biological Databases and Data Analysis	3	0	0	3	50	50	9
4	Theory	SMTA5102	Statistics and Random Process	3	0	0	3	50	50	11
5	Practical	SBIA6101	Python lab	0	0	4	2	50	50	13
6	Practical	SBIA6102	Biological Data analysis Lab	0	0	4	2	50	50	13
			Total Credits for 1st semester = 16							
			Total Marks for 1st semester = 600							

SEMESTER-2

S. NO.	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS CAE	MARKS ESE	PAGE NO.
1	Theory	SCSA5102	Database Technologies	3	0	0	3	50	50	15
2	Theory	SBIA5202	Immunoinformatics and Computational Vaccinology	3	0	0	3	50	50	17
3	Theory	SBIA5203	Biomolecular Modelling	3	0	0	3	50	50	18
4	Theory	SBIA5204	Omics in Biology	3	0	0	3	50	50	19
5	Practical	SBIA6201	Oracle and SQL Lab	0	0	4	2	50	50	20
6	Practical	SBIA6202	Immunoinformatics and Computational Vaccinology Lab	0	0	4	2	50	50	20
7	PT	S739APT	Professional Training	0	0	0	2	100		
Total Credits for 2nd semester = 18										
Total Marks for 2nd semester = 700										

SEMESTER-3

S. No.	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS CAE	MARKS ESE	PAGE NO.
1	Theory	SBIA5301	Systems Biology	3	0	0	3	50	50	22
2	Theory	SBIA5302	Computer Aided drug designing	3	0	0	3	50	50	23
3	Theory	SBIA5303	Machine Learning for Bioinformatics	3	0	0	3	50	50	24
4	Theory	SBIA5304	Microarray data analysis	3	0	0	3	50	50	25
5	Practical	SBIA6301	Computer aided drug design Lab	0	0	4	2	50	50	27
6	Practical	SBIA6302	Systems Biology Lab	0	0	4	2	50	50	27
Total Credits for 2nd semester = 16										
Total Marks for 2nd semester = 600										

SEMESTER-4

Sl. No.	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS CAE	MARKS ESE	PAGE NO.
1	Theory	SBIA5401	R Programming	3	0	0	3	50	50	29
2	Theory		Elective 1	3	0	0	3	50	50	
3	Theory		Elective 2	3	0	0	3	50	50	
4	Practical	SBIA6401	R Programming Lab	3	0	0	2	50	50	30
5	Project	S739APROJ	Project Phase I and II	0	0	0	9	100		
Total Credits for 2nd semester = 20										
Total Marks for 2nd semester = 500										

SEMESTER	THEORY COURSES (INCLUDING ELECTIVE COURSES)			PRACTICAL COURSES (INCLUDING PT AND PROJECT)		
	TOTAL NO.	TOTAL CREDITS	TOTAL MARKS	TOTAL NO.	TOTAL CREDITS	TOTAL MARKS
1	4	12	400	2	4	200
2	4	12	400	3	6	300
3	4	12	400	2	4	200
4	3	09	300	2	11	200
Overall Total	15	45	1500	9	25	900
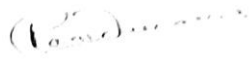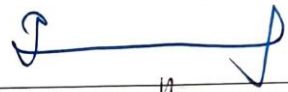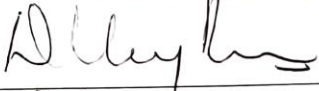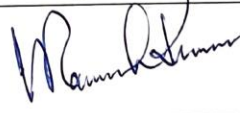
Overall total credits for B.Sc. programme	70
Overall total marks for B.Sc. programme	2400

LIST OF

PROFESSIONAL CORE ELECTIVES

DEPARTMENT ELECTIVES									
SL. NO.	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		PAGE NO.
							CAE	ESE	
1	SBIA7401	Cell and Molecular Genetics	3	0	0	3	50	50	31
2	SBIA7402	Phylogenetic analysis	3	0	0	3	50	50	32
3	SBIA7403	Cheminformatics	3	0	0	3	50	50	34
4	SBIA7404	Pharmacoinformatics	3	0	0	3	50	50	35
5	SBIA7405	Structural Biology	3	0	0	3	50	50	36
6	SBIA7406	Data mining in bioinformatics	3	0	0	3	50	50	38
7	SBIA7407	Medicinal chemistry	3	0	0	3	50	50	39
8	SBIA7408	Next generation sequence data analysis	3	0	0	3	50	50	40
9	SBIA7409	Health Informatics	3	0	0	3	50	50	41
10	SBIA7412	Nanotechnology and Advanced Drug Delivery System	3	0	0	3	50	50	43
11	SCSA7023	Cloud Computing	3	0	0	3	50	50	44
12	SCSA7014	Mathematical Foundations for Computer Science	3	0	0	3	50	50	46

Minutes approveds

Signature of the Members

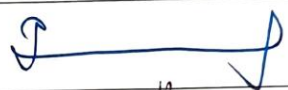| Name	Signature
Dr. C Elizabeth Rani Junius	
Dr. Wilson Aruni, Pro Vicechancellor, Sathyabama Institute of Science & Technology	
Dr. Jemmy Christy, Assistant Professor	
Dr.D.AlexAnand, Assistant Professor	
Dr.Balasankar, Assistant Professor	
Dr.SwethaSunkar, Assistant Professor	
Dr. Ramesh Kumar, Associate Professor and head, Biotechnology Department	

SCHOOL OF BIO AND CHEMICAL ENGINEERING

DEPARTMENT OF BIOINFORMATICS

BOARD OF STUDIES - MINUTES OF MEETING

Subject: Board of Studies- Department of Bioinformatics

Venue: Molecular Modelling Lab
Date: 27/11/2020
Agenda: Opinion/suggestion for improvement of syllabus

External member

        Dr. C Elizabeth Rani Junius, HoD, Department of Biotechnology,
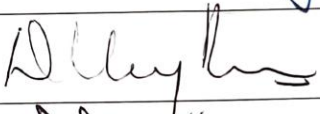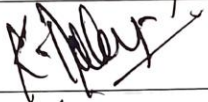   Hindustan College of arts & science, Chennai

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The BOS meeting has been conducted on 27/11/2020 (online mode) to review the syllabus for the Faculty of Bio & Chemical Engineering to be implemented from the Academic year 2019-20 and to make minor amendments.

1. The Chairman Dr. **Wilson Aruni** greeted and welcomed all members of Board of Studies. The HoDs of Dept. of Biomedical Engg, Biotechnology, Bioinformatics, and Chemical Engineering.

2. One of the first suggestions made was to include a more modules in the laboratory course SBIA2201 and SBIA2401 Sequence analysis labs I and II.

3. The modules Conserved Domain Search Service, Genome Workbench, Primer-BLAST and ProSplign were suggested to be included in the lab I

4. Whole genome analysis tools such as Phred, COV2HTML, GenSAS, BAGEL and VIOLIN were suggested to be added to the lab II.

Minutes approved

Signature of the Members

Name	Signature
Dr. C Elizabeth Rani Junius	
Dr. Wilson Aruni, Pro Vicechancellor, Sathyabama Institute of Science & Technology	
Dr. Jemmy Christy, Assistant Professor	
Dr.D.AlexAnand, Assistant Professor	
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