



# ST. XAVIER'S COLLEGE

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## ❖ Minutes and/or Resolutions of Board of Studies meetings held in the last five years for:

### • Department of Life Science and Biochemistry

Programme/s: *Life Science courses for*

2. BSc. Life Science
3. BSc. Life Science and Biochemistry
4. MSc. Life Science

### • Summary

Academic Year	Dates of BoS meetings	Revision in syllabus
2019 - 2020	26-09-2019	✓
	26-02-2020	✓
2018 - 2019	28-07-2018	✓
2017 - 2018	03-03-2018	✓
2016 - 2017	--	✗
2015 - 2016	01-08-2015	✓
2014-2015	26-07-2014	✗
	13-03-2015	✓



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## **2019-2020**

### Dates of BOS

1. 26<sup>th</sup> September, 2019
2. 26<sup>th</sup> February, 2020



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## AGENDA FOR THE MEETING OF THE BOARD OF STUDIES FOR LIFE SCIENCE & ENVIRONMENTAL SCIENCE – 26<sup>th</sup> Sep, 2019

1. Introduction of the Board members.
2. Passing the minutes of the previous meeting of the BOS – Life Science held on 28<sup>th</sup> July, 2018.

3. Syllabi modification at the UG level for theory papers in Life Science:

Changes suggested in course numbers SLSC303, SLSC401, SLSC502 and SLSC603.

4. Examination of tools currently used for evaluation:
  - a. ESE papers (hard copy) on display for Even sem 2018-19 and Odd sem (CIA I) 2019-20.
  - b. Various evaluation methods for CIA II.

5. Student Feedback Questionnaire

6. Any other matter, with the permission of the Chair.

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**Board of Studies – Life Science**

(Minutes for meeting held on 26.9.2019 at 3 pm in the Board room)

**Attendees:**

Title	Board of Studies for Life Sciences
Chair Person	Dr. Seema Das HOD, Dept. of Life Science & Biochemistry, St. Xavier's College, Autonomous
Vice Chancellor Nominee	Dr.Indu George HOD, Dept. of Life Sciences, University of Mumbai, Kalina
Subject expert from other University	Dr. Krishna Iyer Professor, Bombay College of Pharmacy, Kalina.
PG Meritorious Alumnus	Dr. Vainav Patel Head, Department of Biochemistry & Virology, NIRRH (ICMR), Mumbai
Expert from industry/corporate sector	Dr. Rashneh Pardiwala Founder & Director, Center for Environmental Research and Education, Mumbai.
Co-opted expert from outside college	Dr. Shailesh Sonar Principle Scientist- Cell Biology Biogenomics Ltd, Thane, Maharashtra
Faculty member of Dept.	Dr. Nandita Mangalore Associate Professor
Faculty member of Dept.	Dr. Prashant Ratnaparkhi Associate Professor
Faculty member of Dept.	Dr. Manasi Kanuga Assistant Professor
Faculty member of Dept.	Dr. Binoj Kutty Assistant Professor
Faculty member of Dept.	Dr. Bhaskar Saha Assistant Professor

**Absentees:**

Dr. Sorab Dalal, PI, ACTREC-TMC, Associate Professor, HBNI, Navi Mumbai.  
Dr Priya Sunderrajan, Associate Professor, St. Xavier's College (Autonomous)  
Dr Radhika Tendulkar, Assistant Professor, St. Xavier's College (Autonomous)

- Seema Das (SD): wished everyone and thanked all the members for attending the BOS.
- Members introduced themselves, as Krishna Iyer (KI) didn't know several of the members.
- List of members put up by SD
  - No students
  - All faculty members of the department also board members
  - SD projected the minutes from the last meeting held on 28.7.2018.





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- Micropipettes required for all. Should be considered a safety requirement – a point from the last meeting. discussed as follows:
  - Vainav Patel (VP): mouth pipetting should be stopped completely. This issue was raised especially for Biochemistry.
  - NM : student numbers are overwhelming and budgets are a constraint.
  - VP asked if the dealers could accommodate delayed payments.
  - Shailesh Sonar (SS): suggested that industrial projects could be incorporated and the material from such collaborations.
  - KI: Create a pipetting station so 1 pipette per student not required.
  - Increase industrial collaboration
  - VP: Disassemble micropipette and reconstructed – should be in the syllabus as a practical
  - Students are currently sharing micropipettes.
  - RP: need ~ 4 lakhs, she'll look into it and try.
  
- Fire safety drill – discussed as follows:
  - RP: need to train students to use the fire extinguisher. See if Life Science Department can organize a drill through the fire department (can be done 5-6 departments at a time) as a safety practice.
  - SD: generally handled by college.
  - KI said that the local fire brigade could be requested to assist in such fire drills.
  
- Student suggestions/ course were projected.
  - VP suggested the use of saliva as a study of microbiome. Microbiome is huge. Saliva can be tried. VP said that he could help with Sanger 16s RNA for identification of bacteria after DNA has been extracted. He also suggested that FACS could be studies in groups with his lab. FACS can be done as demo in IRR (7-8 kids, max. 10) can be sent.
  - After teaching it in theory, BK willing to do tutorial.
  - SD: the 'thought experiments' were not yet incorporated with the MScs.

The minutes were passed, proposed by VP and seconded by Indu George (IG).

Agenda put up:

- Some courses minor changes: 102, 403, 401, 502, 504, 603
- Some courses major changes: 303

1. 102: Order of units changed – Manasi Kanuga (MK)

Unit 1: Evolution

Unit 2: Gene as a unit of heredity

Unit 3: Mendelian genetics

Name of the course changed from Genetics and Evolution to Evolution and Genetics as suggested by IG.

2. 403: Changed by adding - MK

Sign test introduced in addition to existing Chi square test as a non-parametric test.

Prashant Ratnaparkhi (PR): most data need to be boot strapped, not there earlier.





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KI: asked if Probit analysis is done in Xaviers. To be found out.

3. 401: Introduction to muscular systems added – Bhaskar Saha (BS)  
RP: asked if 8 lectures were needed for the topic of nervous system.  
BS: responded by saying that the topics are discussed in depth so that these topics are not repeated in TY.  
VP: asked if glial cells were covered.  
BS: replied saying they were covered in TY.
4. 502: Small changes in unit 1 – SD  
SD: the details of the topics are being spelled out in the syllabus, rather than assuming that they will be done.  
Arabidopsis is added as there is no plant system.
5. 603:  
Unit 2: sequencing genes and genomes  
The topics were rearranged.  
Unit 4: IG suggested that in transgenic animals, virus resistance and herbicide resistance could be added as examples.
6. 504: Unit 1 – MK  
Behavioural ecology mating behaviour and location incorporated.  
RP: need to focus on human involvement being the driver of changes in population/ carrying capacity. While teaching, need to show distinction between numbers and anthropogenic angle. The students must be made to study the effect human impact assessment on various climatic parameters and animal population dynamics.  
VP: are plastics being studied?  
MK: it is done in Environmental Science.  
SS: Ask for 'Salt' by Mahashwetadevi – collection of short stories – as compulsory reading. Can put some case studies as examples of what happens when rivers connect.  
RP: Do not dilute out ecology.
7. 303: Binoj Kutty (BK) some details have been incorporated.  
VP: suggested that linkage of diverse topics should be brought for instance, there are maps of microbial diversity in water bodies both near humans and away from human habitation. Case study involving contamination of lake by metformin and sex change due to pollution.  
MK: case study discussed in ES.  
BK: to add dysbiosis to Unit 2.  
VP: suggested that microbiota and immune system could be brought in. Could basic immunology be introduced in SY?  
SD: said that teaching immunology was done earlier but now there is no scope.  
VP and RP: said that immunology needs to be there in SY so that it can become useful in the understanding of human diseases.  
SS: suggested that immunology can be a part of FY as well as SY.  
VP: emphasized the importance of gut in immunology, hence some topics need to be associated.



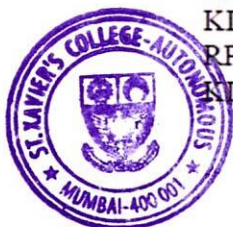


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Unit 3: only infectious diseases with some concomitant references.  
BS: instead of comparative, the use of system could be targeted towards human diseases.  
RP: said that Life Science course needs to have comparative studies.  
NM: added that eventually Physiology becomes human oriented. She asked if comparative can be done in the practicals?  
BS: replied saying that SYs do a presentation for studying these topics.  
SS: mentioned about Behavioral ecology particularly towards UPSC exams such questions could be used for sensitization.  
RP: said that the human lens destroys the essence of Life Science.  
MK: ES practical students are made to write inferences on the consequences of the reading they get and this has made an impact on their understanding. Students use various newspaper where students have to write about the impact and integrate the conceptualizing with relevant reference.  
VP: talked about sequencing bacterial and viral genomes in habitat with respect to human populations and distribution. This could assist students in understanding.

Summary for 303: Try to integrate and bring Immunology.

- SD introduced the feedback form and projected for the cause so that students give their comments.  
RP: asked for explanation for Q3 for rating. The term 'current scenario' needs to be looked at.  
KI: remove #2, 3, 7 from FY/ SY forms.  
SD: Possibility of having different questionnaire for different years.  
RP: asked what was the purpose of generating the questionnaire.  
The questionnaire needs to contain the questions that you really need the answer for:  
Knowledge based  
Behavioural habit  
Attitude  
BS: said that the result of the questionnaire analysis would be skewed, based on the comprehension of the student.  
RP: said a scale of 1 -10 would better if we wanted a better description of the question. She suggested the use of words like strongly agree/ strongly disagree etc, need to be added.  
KI: suggested the removing outliers and use of median responses for better understanding of the survey.  
BS: suggested use of professional help is sought then the question could be better crystallized.  
RP: said that she was willing to come and set-up the questionnaire.  
KI: highlighted the importance of truthfulness in the survey.  
IG: suggested a written survey separately.  
NM: said that the survey with different modules would be generated.  
IG: also emphasized the use of 'strongly' etc.  
KI: suggested the use of 'some change' instead of 'one change'.  
RP: said that 'I don't know' could be one option in the questionnaire.  
KI: appreciated questions, which were subjective.





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NM: said that help from some faculty from Statistics department would be taken to clean up the questions.

SD: said that questions could be modified and sent to BOS members.

SD thanked everyone present and concluded the meeting.



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DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY  
ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI- 400001  
Board of Studies Meeting-Life Science and Environmental Science

Date: 26.02.2020

Venue: Board Room, St. Xavier's College


Time: 9.00 am-10.30 am

## Agenda

1. Passing the minutes of the previous meeting of the BOS, Life Science, held on 26<sup>th</sup> September, 2019
2. Action Taken Report
3. Changes in syllabus of TY paper SLSC0602
4. Examination of tools currently used for evaluation:
  - a. ESE papers (hard copy) on display for Odd Semester 2019-20 and Even Semester (CIA I) 2019-20
  - b. Various evaluation methods for CIA II
5. Any other matter, with the permission of the Chair.



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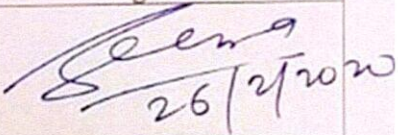
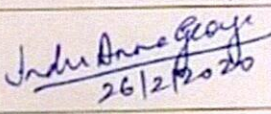
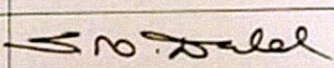
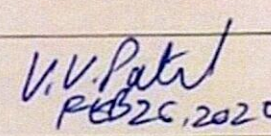
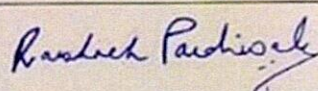
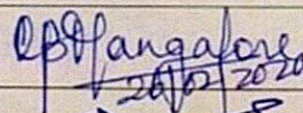
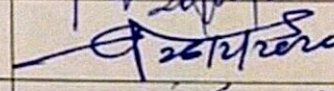
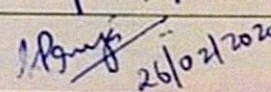
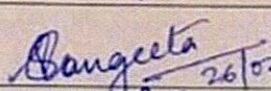
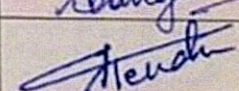
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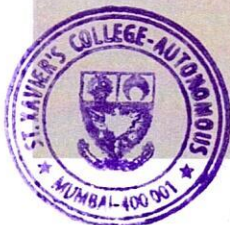
DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY  
ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI- 400001  
Board of Studies Meeting-Life Science and Environmental Science

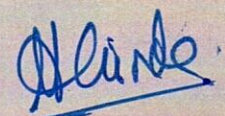
Date: 26.02.2020

Time: 9.00 am-10.30 am

Venue: Board Room, St. Xavier's College

Title	Board of Studies for Life Sciences	Signature
Chair Person	Dr. Seema Das Associate Prof & HOD, Dept. of Life Science & Biochemistry, St. Xavier's College, Autonomous	 26/2/2020
Vice Chancellor Nominee	Dr. Indu George Associate Prof & HOD, Dept. of Life Sciences, University of Mumbai, Kalina	 26/2/2020
Subject expert from other University	Dr. Krishna Iyer Professor, Bombay College of Pharmacy, Kalina.	
Subject expert from other University	Dr. Sorab Dalal PI, ACTREC-TMC, Associate Professor, HBNI, Navi Mumbai.	
PG Meritorious Alumnus	Dr. Vainav Patel Head, Department of Biochemistry & Virology, NIRRH (ICMR), Mumbai	 26/2/2020
Expert from industry/corporate sector	Dr. Rashneh Pardiwala Founder & Director, Center for Environmental Research and Education, Mumbai.	
Co-opted expert from outside college	Dr. Shailesh Sonar Principle Scientist- Cell Biology Biogenomics Ltd, Thane, Maharashtra	
Faculty member of Dept.	Dr. Nandita Mangalore Associate Professor	 26/02/2020
Faculty member of Dept.	Dr. Prashant Ratnaparkhi Associate Professor	 26/2/2020
Faculty member of Dept.	Dr. Priya Sundarrajan Associate Professor	 26/02/2020
Faculty member of Dept.	Dr. Sangeeta Shetty Associate Professor	 26/02/2020
Faculty member of Dept.	Dr. Radhika Tendulkar Assistant Professor	





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Faculty member of Dept.	Dr. Manasi Kanuga Assistant Professor	<i>Manasi</i> 26/2/2020
Faculty member of Dept.	Dr. Maya Murdeshwar Assistant Professor	<i>Maya</i> 26/02/2020
Faculty member of Dept.	Dr. Binoj Kutty Assistant Professor	<i>Binoj</i> 26/2/2020
Faculty member of Dept.	Dr. Bhaskar Saha Assistant Professor	<i>Bhaskar</i> 26/2/2020



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## Board of Studies – Life Science

(Minutes of the meeting held on 26.02.2020 Time: 10 am

Venue: XIMR Board room)

### Attendees:

Title	Board of Studies for Life Sciences
Chair Person	Dr. Seema Das HOD, Dept. of Life Science & Biochemistry, St. Xavier's College, Autonomous
Vice Chancellor Nominee	Dr. Indu George HOD, Dept. of Life Sciences, University of Mumbai, Kalina, Mumbai.
Expert from Research Institute	Dr. Sorab Dalal, PI, ACTREC-TMC, Associate Professor, HBNI, Navi Mumbai.
Meritorious Alumnus	Dr. Vainav Patel Head, Department of Biochemistry & Virology, NIRRH (ICMR), Mumbai
Expert from industry/corporate sector	Dr. Rashneh Pardiwala Founder & Director, Center for Environmental Research and Education, Mumbai.
Faculty member of the Dept.	Dr. Nandita Mangalore, Associate Professor
Faculty member of the Dept.	Dr. Prashant Ratnaparkhi, Associate Professor
Faculty member of the Dept.	Dr. Priya Sundarrajan, Associate Professor
Faculty member of the Dept.	Dr. Sangeeta Shetty, Associate Professor
Faculty member of the Dept.	Dr. Radhika Tendulkar, Assistant Professor
Faculty member of the Dept.	Dr. Maya Murdeshwar, Assistant Professor
Faculty member of the Dept.	Dr. Manasi Kanuga, Assistant Professor
Faculty member of the Dept.	Dr. Binoj Kutty, Assistant Professor
Faculty member of the Dept.	Dr. Bhaskar Saha, Assistant Professor

### Absentees:

Co-opted expert	Dr. Krishna Iyer, Professor, Bombay College of Pharmacy, Kalina
Industry Expert	Dr Shailesh Sonar, Principle Scientist- Cell Biology Biogenomics Ltd, Thane, Maharashtra

- Dr. Seema, HOD, Department of Life Science and Biochemistry, started the meeting by wishing everyone and thanking all the members for attending the BOS.
- Dr. Seema projected the minutes from the last BOS meeting held on 26.9.2019. The minutes were formally passed with Dr. Rashneh proposing it and Dr. Vainav seconding it.
- **Fire drill:** Dr. Rashneh suggested some agencies that carry out demonstrations in housing societies. Towards this Dr. Priya informed the members about the fire drill that was to be conducted on 27<sup>th</sup> February, 2020 by the Rarico Fire Engineers, Mumbai and organized by the Lab Safety Committee of the college.



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- Dr. Vainav suggested that among the safety measures, an audit of chemicals and where they are stored could be done.
- Dr. Seema explained how all the syllabi changes suggested in the current BOS would be implemented from June 2020.
- Dr. Seema mentioned that modifications that were suggested for the SYBSC course SLSC 303 were still in progress. Dr. Kutty further explained that college is in the process of taking student feedbacks for the courses, so these can also be taken into consideration when final changes are made. Some aspects of Immunology were to be introduced at the SY level and so this SY paper and the TY Immunology course could be looked at jointly. Dr. Dalal added that if this was done, then in the TY the students could be asked to brush over the concepts of immunology covered in SY and a quiz can be taken in this regard.
- Dr. Mangalore (who is also the IQAC coordinator of the college) informed the Board about the Student Feedback Procedure. She then went on to discuss the various questions in the feedback form. Dr. Rashneh sought clarification regarding the last question in the Feedback "Academic enhancement achieved by completion of the course", and also the fourth point in Q3 "Apply theory studied to practical solutions or research work".
  - Dr. Seema explained how Q4 had a weightage of 100M which included questions like Percentage of syllabus covered, Percentage of syllabus by self-study, Percentage of syllabus not covered at all. Dr. Mangalore further elaborated on this as a quality assurance step.
  - Dr. Dalal mentioned that the question as to "ability of the course to stimulate critical thinking" can be modified because not only the course, but the assignments and evaluations can also trigger critical thinking among the students.
  - Dr. Vainav also felt that suggestions towards new topics, improvement of curriculum etc. obtained via this feedback can be incorporated at the department level.
  - TY Neurobiology syllabus (SLSc 602 ) and the suggested changes were projected on the screen. Dr. Radhika justified the changes saying that some topics were removed to avoid repetitions and incorporation of new topics such as neural circuits, anatomical and functional organizational of the nervous system.
  - Dr. Mangalore sought clarification regarding the topics "The Nervous System" and the extent to which they were covered in SY physiology.
  - Dr. Saha explained that the details of anatomy, brain parts, blood brain barrier, physiology and pathology, concept of a neuron etc. was being covered in SY.
  - Dr. Radhika mentioned how a new topic on "Neuroimmunology" has been added in the TY 602 syllabus.
  - On being asked about glucose transport in brain cells, Dr. Radhika mentioned that this was covered in the TY SLSC 502 Developmental Biology course.
  - Regarding the Unit 4 of the syllabus, Dr. Vainav wanted to know whether the debatable concepts of regeneration and plasticity are covered here, to which Dr. Bhaskar replied in the affirmative.
  - Dr. Bhaskar also added that a topic of "Adult Neurogenesis" was incorporated. Further the subtopic "Memory" was changed to "Learning and Memory". Dr. Vainav added that comparative analysis of heuristic memory, machine learning, AI versus human learning could be also considered.





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- Dr. Radhika mentioned how some topics like "Disorders related to nervous system" are given to the students as assignment topics, wherein open resources like Wikipedia are not allowed. They have to refer to publications and books and also submit an elaborate reference list.

• Dr. Seema then moved to projecting some innovation methods of evaluation undertaken by the teaching faculty for some of the courses. She gave examples of the courses where regular multiple-choice questions, crosswords to critical thinking questions etc were included in CIA. For some courses like SLSC 502 essay topics are given before hand and the student asked to come prepared for an essay on any of the topics. SLSC 503 involved presentations and SLSC 504 included field trip related questions. For the Cross Faculty course on Nutrition and Reproductive Health, a 10M assignment on Traditional cuisine and the its Nutritional aspects was given.

• The Board also gave some valuable suggestions regarding the modes of evaluation. Dr. Vainav suggested to include white board presentation and not slides so that students are able to understand the concepts better. Dr. Dalal felt there should be reduction in the number of traditional assignments given. Instead the students should be given reference papers and open book tests should also be encouraged, since there is a difference between critical thinking and memory. They should be allowed to get the papers to the exam. Dr. Rashneh commented on including topics effect of genetically modified crops in nutrition assignments. Dr. Maya added how she also does "Facts versus opinions for diets".


• Dr. Bhaskar mentioned how Research Based Learning has been incorporated wherever possible, like in SY 401 practicals where in physiological parameters are actually measured by the students eg. Change in BP with exercise or coffee consumption is noted and a data set is thus generated. This data set gathered in Physiology is also used during the SY 403 Biostatistics practicals, to calculate correlation and regression. To this Dr. Vainav suggested how a lot of clinical data sets are freely available on PUBMED and can be used for analysis.

• Dr Vainav gave some valuable suggestions and insights into Public and Reproductive health in Indian context and how this could be introduced to the students. The website for the Ministry of Family Health and Welfare explains population dynamics, significance of HPV vaccination, contraception, reproductive rights, HIV status and other real world issues which the students at college level usually need guidance for. To this Dr. Nandita informed the members that the Women's Development Cell of the College regularly arranges talks on such issues.

• The meeting ended by Dr Seema thanking everyone for attending and giving inputs.

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RESOLUTION

"The Subject Board in LIFE SCIENCE and ENVIRONMENTAL SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the syllabus of the Third Year Course of studies for the Sixth Semester, which is being implemented from the Academic Year 2020-21"

Title	Board of Studies for Life Sciences	Signature
Chair Person	Dr. Seema Das HOD, Dept. of Life Science & Biochemistry, St. Xavier's College, Autonomous	<i>Seema</i> 26/2/2020
Vice Chancellor Nominee	Dr. Indu George HOD, Dept. of Life Sciences, University of Mumbai, Kalina	<i>Indu George</i> 26/2/2020
Subject expert from other University	Dr. Krishna Iyer Professor, Bombay College of Pharmacy, Kalina.	Absent
Subject expert from other University	Dr. Sorab Dalal PI, ACTREC-TMC, Associate Professor, HBNI, Navi Mumbai.	<i>S. Dalal</i>
PG Meritorious Alumnus	Dr. Vainav Patel Head, Department of Biochemistry & Virology, NIRRH (ICMR), Mumbai	<i>V.V. Patel</i> FEB 26, 2020
Expert from industry/corporate sector	Dr. Rashneeh Pardiwala Founder & Director, Center for Environmental Research and Education, Mumbai.	<i>Rashneeh Pardiwala</i>
Co-opted expert from outside college	Dr. Shailesh Sonar Principle Scientist- Cell Biology Biogenomics Ltd, Thane, Maharashtra	Absent
Faculty member of Dept.	Dr. Nandita Mangalore Associate Professor	<i>N. Mangalore</i> 26/2/2020
Faculty member of Dept.	Dr. Prashant Ratnaparkhi Associate Professor	<i>P. Ratnaparkhi</i> 26/2/2020
Faculty member of Dept.	Dr. Priya Sundarajan Associate Professor	<i>Priya</i> 26/2/2020
Faculty member of Dept.	Dr. Sangeeta Shetty Associate Professor	<i>Sangeeta</i> 26/2/2020
Faculty member of Dept.	Dr. Radhika Tendulkar Assistant Professor	<i>Radhika</i> 26/2/2020
Faculty member of Dept.	Dr. Manasi Kanuga Assistant Professor	<i>Manasi</i> 26/2/2020



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Faculty member of Dept.	Dr. Maya Murdeshwar Assistant Professor	<i>Maya</i> 26/02/2020
Faculty member of Dept.	Dr. Binoj Kutty Assistant Professor	<i>Binoj</i> 26/2/2020
Faculty member of Dept.	Dr. Bhaskar Saha Assistant Professor	<i>Bhaskar Saha</i> 26/2/2020

Date: 26.02.2020



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**2018-2019**



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**AGENDA FOR THE MEETING OF THE BOARD OF STUDIES FOR LIFE  
SCIENCE & ENVIRONMENTAL SCIENCE – 28<sup>th</sup> July 2108 March 2018**

1. Introduction of the Board members.
2. Passing the minutes of the previous meeting of the BOS – Life Science held on 3<sup>rd</sup> March 2018.
3. Syllabi modification at the UG and PG level for practicals in Life Science.  
  
UG: Life Science theory
  - a. T.Y.B.Sc. students' feedback (written)
  - b. Discussion of the Modifications in the practicals over 6 semesters  
PG: Life Science theory syllabii and Practical Project
  - a. Discussions of the Modifications in the practicals over 4 semesters
  - b. Increase in marks for the project at the PG level.
4. Examination of tools currently used for evaluation:
  - a. ESE papers (hard copy) on display for Even sem 2017-18 and Odd sem (CIA I) 2018-19
5. Any other matter, with the permission of the Chair.

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DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY  
ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI - 400001  
Board of Studies Meeting - Life Science

28<sup>th</sup> July 2018

### Attendance of Members

Board of Studies for Life Science	Signature
1. Dr. Indu George	<i>Indu Anna George</i> 28/7/2018
2. Dr. Krishna Iyer	<i>Km Krishna</i> 28/7/18
3. Dr. Sohrab Dalal	
4. Dr. Vainav Patel	<i>V.V. Patel</i>
5. Dr. Rashneh Pardiwala	<i>R. Pardiwala</i>
6. Dr. Richa Richy	
7. Dr. Shailesh Sonar	<i>Shailesh Sonar</i> 28/07/2018
8. Dr. Nandita Mangalore	<i>N. Mangalore</i> 28/07/18
9. Dr. Seema Das	<i>Seema Das</i> 28/7/18
10. Dr. Priya Sundarajan	<i>Priya Sundarajan</i>
11. Ms. Zubia Shaikh	<i>Zubia Shaikh</i> 28/7/18
12. Ms. Spandan Gite	<i>Spandan Gite</i>



*Principal*

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**Minutes of the Meeting of Board of Studies for Life Sciences**  
**held on 28th July, 2018.**

**Venue :** Seminar Room, St. Xavier's College- autonomous, Mumbai.

**Members present :** Dr. Nandita Mangalore

Dr. Seema Das

Dr. Priya Sunderrajan

Dr. Vainav Patel

Dr. Indu George

Dr. Krishna Iyer

Dr. Shailesh Sonar

Dr. Rashnch Pardiwala

**Students members :** Spandan Gite

Zubia Shaikh

- Dr. Nandita Mangalore (NM) initiated the meeting by requesting the Members of the Board to introduce themselves, as some members were new. The minutes of the last BOS meeting held on 03.03.2018 were displayed. The minutes were passed by IG, KI, and RP; RP proposed the motion and KI seconded it.

**UG Practicals:**


- The Current and Proposed Practical list was displayed by NM on a screen. NM explained that the rationale behind these changes was to do away with unnecessary repetition and more involvement of thought process rather than working as technicians. While not doing away with the normal practical methods, we are trying to approach these in a project-like manner.
- VP wanted to know if any of these practicals were offsite, NM explained that the number of students was too large for off site experiments and where possible, some demo expts were being done.

**FY Practicals:**

- VP was very concerned about the issue of mouth pipetting and requested for this to be taken up as a serious safety issue and be done away with asap. As the department does not have the budget to provide every student with an autopipette, NM suggested that the students buy their own in the SY, with permission from the college- this suggestion was very well received.
- Concerns were also raised regarding biosafety and fire safety by KI and RP. SS suggested the use of videos rather than mock drills for awareness.
- VP suggested doing biodegradation expts on fries from McDonalds to bring home the



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harmful effects of junk food. RP suggested taking the students to manufacturing units to further this cause.

- IG wanted to know why microscopy was not being done in the 1<sup>st</sup> sem of FY- NM explained the reasons : FYs too new and still leaving this course. VP suggested doing a 'take it apart' and 'put it back' approach with microscopes and autopipettes and also offered to donate usable autopipettes for the purpose. SS suggested letting the students do the calibration themselves.

#### SY Practicals:

301


- There was a discussion on the ban on animal dissections in labs. RP suggested showing videos as this practice was being used in medical courses also now. VP supported her view.
- IG and RP were of the opinion that more practicals should be done using plants as model organisms. They suggested using research on communication between trees via roots, dispersal of seeds, importance of pollen and bees, and work on mycorrhizae to frame such practs. SD mentioned that plant immunity was being currently taught in TY immunology.
- VP suggested practicals correlating emission levels of various pollutants to indicator species and further analysis.
- SD mentioned that indicator species were a part of the Ecology syllabus earlier but not so now and proposed that these suggestions could probably be incorporated in the TY Ecology projects this semester.

The student members entered at this point and introduced themselves, the Board members also gave their introductions.

- 302
- VP suggested adding forensic and biosensors application to the SY biochemistry practicals to make these more interesting. He also suggested checking the effect/s of stress on bacterial growth, enzyme activation etc and integrating pH to metabolic activity in vivo. Practical comparing efficiencies of buffering systems like bicarbonate and phosphate were also suggested.
- NM explained the proposed project for SYs. This will be done as a group project where the groups get any nuts of their choice, extract the oil weigh the yield and do separation by TLC.
- VP suggested practicals demonstrating plant vs animal fat (cholesterol from egg yolk)
- 303
- PS and BK explained that these practicals were being performed with the aim of reinforcing techniques.



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- VP suggested using dip sticks from HiMedia to check bacterial load etc. He recommended experiments for checking and correlating antibiotic vs phage activity.
- SS mentioned that even big Pharma companies were withdrawing antibiotic research now.
- VP suggested practicals to make students aware of our microbiota and good vs bad bacteria. SD mentioned that this was being taught in TY Immuno.
- RP wanted to know why pracs on mosquitoes had been removed, NM explained that this was being done in theory.
- SS suggested awareness about over sanitization and extinction of bacteria(?). SD mentioned that Hygiene Hypothesis was being taught in TY Immuno.
- 401, 402 & 403
- VP suggest experiments comparing DNA repair to UV repair.

#### TY Practicals:

501

- VP suggested introducing students to read sequencing for bacteria as also metagenomics analysis. He offered to come to demonstrate these techniques to our students.
- VP wanted the students to be taught Literature Review- the students told him that this was being done in the SY.
- All the members agreed that spoon feeding of students needed to be stopped and more effort from the students was required. Experiments could be made more interesting e.g. by correlating growth of microbes to pH and other factors.

502, 504

- The introduction of project was very well received by all the board members.
- RP, IG and VP suggested projects like determining biodiversity of a specific sample size over a period of time, comparison of urban and non-urban sites, quadrats and transects using various sites etc followed by processing and analysis of the data. RP willing to help in the design and methodology of such projects for 504. She also suggested joining organisations like the BNHS for a part of their ongoing project/s.

601

- VP wanted to know why FACS was not being done, he offered to help out with this.
- SS suggested conducting "Thought experiments" where real experiments not possible, e.g. regulation mechanisms for cancer- there's no right or wrong and hypothetical solutions can be suggested by the students. NM said that this could be made a part of the CIA II.





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The Board unanimously passed the suggestion of increasing the marks for Project/Dissertation from 120 to 200.

VP mentioned that from a consumer point of view, research function carried more weight for Ph.D admissions.

VP and SS suggested showing FACS to students with the help of CDs. SS offered to give a tutorial before FACS.

BK asked if any cheap antibodies were available, VP offered to check and get back.

### Suggestions by students:

- Introduction to more software in Biostatistics, other than MS Excel and SPSS
- Introduction to Bioinformatics in the SY
- Chi square removed from FY and brought into SY pracs but taught in theory in the FY
- Practicals on blood shifted to 4<sup>th</sup> semester while circulation taught in theory in the 3<sup>rd</sup> sem
- In the TY, ES pracs include more of titrations, link it to some kind of field work rather than just lab experiments

End Semester Exam Question papers of previous semesters for both UG and PG courses were displayed for review.

NM informed the board of her decision to step down from the headship of the Department from the next semester and that SD would take over as the HOD.





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## RESOLUTION

The Subject Board in LIFE SCIENCE and ENVIRONMENTAL SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the practical syllabus of the First Year Course of studies for the First and Second Semester, which is being implemented from the Academic Year 2018-19"

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu George</i> 28/7/18
Dr. Seema Das	Senior Teacher	<i>Seema Das</i> 28/7/18
Dr. Priya Sundarrajan	Senior Teacher	<i>Priya Sundarrajan</i> 28/7/18
Dr. Krishna Iyer	Subject Expert	<i>Krishna Iyer</i> 28/7/18
Dr. Nohrab Dalal	Subject Expert	
Dr. Vainav Patel	Subject Expert	
Dr. Rashneeh Pardiwala	Industry Professional (Applied Component)	<i>Rashneeh Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	<i>Shailesh Sonar</i> 28/7/2018
Ms. Zubia Shaikh	Student Nominee	<i>Zubia Shaikh</i>
Ms. Spandan Gite	Student Nominee	<i>Spandan Gite</i>







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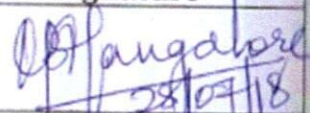
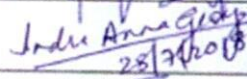
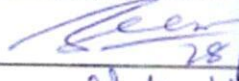
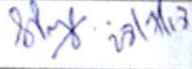
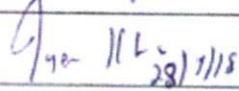
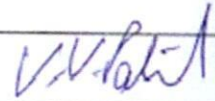




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## RESOLUTION

"The Subject Board in LIFE SCIENCE and ENVIRONMENTAL SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the practical syllabus of the Second Year Course of studies for the Third and Fourth Semester, which is being implemented from the Academic Year 2018-19"

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	 28/07/18
Dr. Indu George	University Representative	 28/07/18
Dr. Seema Das	Senior Teacher	 28/7/18
Dr. Priya Sundarrajan	Senior Teacher	 28/7/18
Dr. Krishna Iyer	Subject Expert	 28/7/18
Dr. Sohrab Dalal	Subject Expert	
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	 28/07/2018
Ms. Zubia Shaikh	Student Nominee	
Ms. Spandan Gite	Student Nominee	





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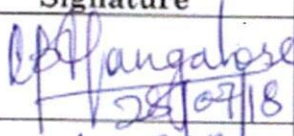
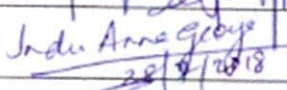
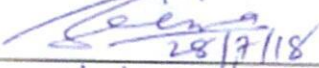
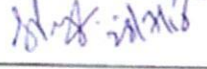
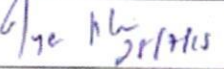




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## RESOLUTION

"The Subject Board in LIFE SCIENCE and ENVIRONMENTAL SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the practical syllabus of the Third Year Course of studies for the Fifth and Sixth Semester, which is being implemented from the Academic Year 2018-19"

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	 28/07/18
Dr. Indu George	University Representative	 28/7/2018
Dr. Seema Das	Senior Teacher	 28/7/18
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	
Dr. Sohrab Dalal	Subject Expert	
Dr. Vainav Patel	Subject Expert	Present
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	 28/07/2018
Ms. Zubia Shaikh	Student Nominee	
Ms. Spandan Gite	Student Nominee	



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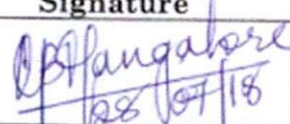
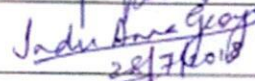
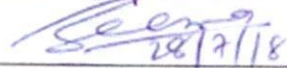
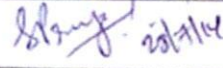
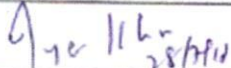




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## RESOLUTION

"The Subject Board in LIFE SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the practical syllabus of the Postgraduate Course of studies for semesters Seventh to Tenth, which is being implemented from the Academic Year 2018-19"

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	 28/07/18
Dr. Indu George	University Representative	 28/7/2018
Dr. Seema Das	Senior Teacher	 28/7/18
Dr. Priya Sundarrajan	Senior Teacher	 28/7/18
Dr. Krishna Iyer	Subject Expert	 28/7/18
Dr. Sohrab Dalal	Subject Expert	
Dr. Vainav Patel	Subject Expert	Present
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	 28/07/2018
Ms. Zubia Shaikh	Student Nominee	
Ms. Spandan Gite	Student Nominee	





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**AGENDA FOR THE MEETING OF THE BOARD OF STUDIES FOR LIFE  
SCIENCE & ENVIRONMENTAL SCIENCE – 3<sup>rd</sup> March 2018**

1. Introduction of the Board members.
2. Passing the minutes of the previous meeting of the BOS – Life Science held on 1<sup>st</sup> August 2015.
3. Syllabi modification at the UG and PG level for Life Science.

**UG: Life Science theory**

- a. T.Y.B.Sc. students' feedback.
- b. Minor Modifications instituted by the teachers of 3 theory courses (TY - Developmental biology, Genetics; SY - Molecular Biology).
- c. CIA II - options


**PG: Life Science theory syllabi and Practical Project**

- a. M.Sc. II students' feedback.
  - b. Modifications instituted by the teachers of 8 theory courses
  - c. Alternative for project at PG level.
  - d. CIA II- options
4. Examination of tools currently used for evaluation:
    - a. ESE papers (hard copy) on display for Even sem 2016-17 and Odd sem 2017-18
    - b. CIA -2 modalities shared on a slide.
  5. Any other matter, with the permission of the Chair.

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DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY  
ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI - 400001  
Board of Studies Meeting - Life Science

3<sup>rd</sup> March 2018

### Attendance of Members

Board of Studies for Life Science	Signature
1. Dr. Indu George	<i>Indu Anna George</i> 3/3/2018
2. Dr. Krishna Iyer	<i>Krishna Iyer</i>
3. Dr. Sohrab Dalal	<i>S. N. Dalal</i>
4. Dr. Vainav Patel	-
5. Dr. Rashneh Pardiwala	<i>Rashneh Pardiwala</i>
6. Dr. Richa Richy	-
7. Dr. Shailesh Sonar	-
8. Dr. Nandita Mangalore	<i>Nandita Mangalore</i>
9. Dr. Priya Sundarrajan	<i>Priya Sundarrajan</i>
10. Dr. Radhika Tendulkar	<i>Radhika Tendulkar</i>
11. Ms. Samyuktha Rajan	<i>Samyuktha Rajan</i>
12. Mr. Naythan D'Cunha	<i>Naythan D'Cunha</i>



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**Minutes of the Meeting of Board of Studies for Life Sciences  
held on 3<sup>rd</sup> March, 2018.**

**Venue :** Board Room, St. Xavier's College, Mumbai.

**Members present :** Dr. Nandita Mangalore  
Dr. Radiya Pacha Gupta  
Dr. Priya Sundarrajan  
Dr. Radhika Tendulkar  
Dr. Indu George  
Dr. Krishna Iyer  
Dr. Sorab Dalal  
Dr. Rashneh Pardiwala

**Students members :** Naythan D'cunha  
Samyuktha Rajan

- Dr. Nandita Mangalore (NM) initiated the meeting by requesting the Members of the Board to introduce themselves, since a new Board has been constituted. This was followed by introduction of the Student members.
- The minutes of the last BOS meeting held on 1.8.2015 were displayed. The minutes were passed by IG, KI, SD and RP.

**Students' input about syllabi:**

**UG:**


- S.LSC.1.01 Genetics - Evolution needs to be done in detail.
- S.LSC.3.01 - Include more aspects of Comparative physiology in teaching.
- S.LSC.3.03 Microbiology - Include topics on Viruses and Fungi.
- S.LSC.5.04 and 6.04 - Overlap between EB and ES needs to be reduced.
- S.LSC.6.01 Immunology - Cytokines can be introduced in the syllabus.
- S.LSC.6.02 Neurobiology - The topic 'Cells of the Nervous system' can be given for self-study.

**PG:**

- Shift Biostatistics course from semester I to II.
- Cell Biology course can be shifted to Semester I.
- Include research proposal writing in Semester II.



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#### Revisions in UG Syllabi:

- The revised syllabi, based on previously received students' suggestions, was put forth to the Board members.
- S.LSC.4.02 Molecular Biology - The modified syllabus was presented and approved. SD suggested renaming Unit III as 'Types of DNA Damage'. IG and SD suggested Lambda Phage Operon as a self-study topic.
- S.LSC.5.01 Genetics - Syllabus changes were approved with DNA repair process replacing Cancer genetics in Unit III.
- S.LSC.5.02 Developmental Biology - The rearrangement of the syllabus for better classroom delivery and understanding, was approved by the BOS.

#### Revisions in PG syllabi:

- S.LSC7.03 Biochemistry Introduce Eadie-Hofstee plot, as it is widely used in publications. Replace 'Marker Enzymes in Diseases' with 'Purine and Pyrimidine synthesis'.
- S.LSC.7.04 Lab Management and Analytical Techniques: Unit II can be titled as 'Separation Methods'.
- S.LSC8.03 Immunology - Introduce 'Bispecific Antibodies' as a topic. The rearrangement in the syllabus for this course was approved.
- S.LSC.9.03 - Bioinformatics syllabus was presented and approved.
- S.LSC. 10.01 Medical Genetics syllabus changes were presented and approved.
- S.LSC. 10.02 Pharmacology and Clinical Research - Introduce Drug Transporters in unit I. Rename Unit III as 'Drug safety and Efficacy'. Shift last topic of Unit III "Ethical and regulatory aspects of clinical trials" as topic 1 of unit IV.
- S.LSC.10.03 Cancer Biology and Stem cell Biology - SD offered to compile and send syllabus for 2 units on Cancer Biology. Syllabus for Stem cell Biology was reviewed.
- S.LSC. 10.04 - 'Cosmeceuticals' to be added as a topic in Unit II - Nutraceuticals. Unit I - Animal cell and tissue culture and Unit IV - Toxicology was approved.

#### Suggestions for Practical Courses:

##### UG:

- SR requested for some Computational Biostatistics practicals and application-based problems. The members inquired whether the students could be asked to bring in their



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laptops, if necessary; so that the session could be conducted in the lab. NM agreed to introducing EXCEL based practicals, which could be conducted in the Knowledge Centre computer lab.

- An Honour's Programme in Computational Biosatistics, Computational Biology and Bio-informatics could be introduced.
- The students suggested introducing more group projects in the course of 3 years, involving animal models. KI suggested that practicals could be designed as research questions which the students address by designing their methodologies. SD and KI proposed adding practicals using C.elegans and Zebrafish models.
- RPG informed the members about students being made to write their own journals for some courses/some experiments in a course, rather than being given a printed journal. It was observed that students have done a fairly good job of writing their journal. SD strongly felt that students be encouraged to write more and develop their scientific communication skills.
- RP inquired about the IVs that the department conducts. PS updated them on the visits to i) an IVF lab at Lilavati hospital, Bandra; ii) Barking Deer brewery, iii) Water treatment plant and botanical garden at Godrej compound, Vikhroli. The members were informed about the science outreach activity conducted by S.Y.B.Sc students in the Worli Sea Face BMC school, for underprivileged children. The members appreciated the above and stressed that these IVs and similar such activities should be continued.

PGI

- ND requested practicals involving Computational Biology and Biostatistics be introduced.
- The members felt that M.Sc. students need to be given at least 3 months' time for an internship.
- NM proposed making MSc projects optional since not all students are capable / motivated enough to handle it. RP, SD and KI were strongly in favour of continuing the M.Sc projects, since these projects help students develop basic skill sets required for a career in Life Sciences.
- The members suggested that if necessary, students not capable of conducting a project could be given an option of a carrying out a comprehensive literature review, followed by a defense of the same. The department members agreed to try this option for the next academic year.



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- KI suggested introducing Fire Safety and Hazards in the Practical course. RP suggested a fire safety audit of the lab and a drill to be conducted by the Department for the next academic year, by inviting Officials of the Fire Department, Kalina.
- New First Aid Kits mandated for science labs, to be procured. KI to provide contact details of provider.
- NM informed the members that the syllabus for Practical courses is currently being redesigned. The same will be presented to the members in the next meeting to be held in June 2018.

**Assessment modalities:**

- End Semester Exam Question papers of previous semesters for both UG and PG courses were displayed for review.

**UG:**

- The student members appreciated the CIA-2 modalities used in the current year, such as debates on various areas pertaining to Neuroethics; reviewing the work of Nobel laureates; designing a research question and reviewing of available literature.
- In S.L.Sc.6.04 - The National Action Plan on Climate Change could be a topic for self-study, followed by a CIA on the same.
- KI suggested that should a semester be shorter due to Government holidays or natural eventualities, only basics can be delivered to students in S.Y. and T.Y classes. The extensions/applications can be given for self-study and students can be assessed for the same in CIA-2.

**PG:**

- Flipped Classroom presentation schedule needs to be spaced out so that students get sufficient time to read on the topics assigned in each course.
- The previous BOS had suggested book/chapter reading and review as an activity for MSc students. SD proposed that this activity be initiated and an entire book be read and reviewed in the May vacation. This could be one of the CIAs for PG students.





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**RESOLUTION**

"The Subject Board in LIFE SCIENCE and ENVIRONMENTAL SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the syllabus of the Second Year Course of studies for the Fourth Semester, which is being implemented from the Academic Year 2018-19"

SLSC0402

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu Anne George</i> 31/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	<i>Krishna Iyer</i>
Dr. Sohrab Dalal	Subject Expert	<i>Sohrab Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>Rashneh Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	<i>Samyuktha Rajan</i>
Mr. Naythan D'Cunha	Student Nominee	<i>Naythan D'Cunha</i>



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### RESOLUTION

"The Subject Board in LIFE SCIENCE and ENVIRONMENTAL SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the syllabus of the Third Year Course of studies for the Fifth Semester, which is being implemented from the Academic Year 2018-19"

SLSC 0501

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu George</i> 31/12/18
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	<i>K. Iyer</i>
Dr. Sohrab Dalal	Subject Expert	<i>S. S. Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>R. Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	<i>Samyuktha Rajan</i>
Mr. Naythan D'Cunha	Student Nominee	<i>Naythan D'Cunha</i>



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## RESOLUTION

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SLS0502

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu Anna George</i> 31/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	<i>K. Iyer</i>
Dr. Sohrab Dalal	Subject Expert	<i>S. Sohrab Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>R. Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	<i>Samyuktha Rajan</i>
Mr. Naythan D'Cunha	Student Nominee	



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### RESOLUTION

"The Subject Board in LIFE SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the syllabus of the Masters Course (M.Sc. part I) of studies for the Seventh Semester, which is being implemented from the Academic Year 2018-19"

SLSC0703

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu Anna George</i> 31/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	<i>K. Iyer</i>
Dr. Sohrab Dalal	Subject Expert	<i>S. R. Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>R. Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	<i>Samyuktha Rajan</i>
Mr. Naythan D'Cunha	Student Nominee	<i>Naythan D'Cunha</i>



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## RESOLUTION


"The Subject Board in LIFE SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the syllabus of the Masters Course (M.Sc. part I) of studies for the Eighth Semester, which is being implemented from the Academic Year 2018-19"

SLSC0803

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	Indu Anne George 31/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	
Dr. Sohrab Dalal	Subject Expert	Sohrab Dalal
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	Rashneh Pardiwala
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	Samyuktha Rajan
Mr. Naythan D'Cunha	Student Nominee	Naythan D'Cunha



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## RESOLUTION

"The Subject Board in LIFE SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the syllabus of the Masters Course (M.Sc. part II) of studies for the Ninth Semester, which is being implemented from the Academic Year 2018-19"

SLSC0903

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu Anne George</i> 31/3/2019
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	
Dr. Sohrab Dalal	Subject Expert	<i>S. V. Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>R. Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	<i>Samyuktha Rajan</i>
Mr. Naythan D'Cunha	Student Nominee	<i>Naythan D'Cunha</i>



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## RESOLUTION

"The Subject Board in LIFE SCIENCE for St. Xavier's College (Autonomous), Mumbai, hereby approves the syllabus of the Masters Course (M.Sc. part II) of studies for the Tenth Semester, which is being implemented from the Academic Year 2018-19"

SLSC1001

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu Anna George</i> 3/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	<i>K. Krishna Iyer</i>
Dr. Sohrab Dalal	Subject Expert	<i>S. V. Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>R. Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	
Mr. Naythan D'Cunha	Student Nominee	



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*H. Indu*  
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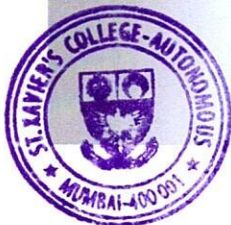
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### RESOLUTION

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SLSC1002

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu Anna George</i> 3/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	<i>K. Krishna Iyer</i>
Dr. Sohrab Dalal	Subject Expert	<i>S. Sohrab Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>R. Rashneh Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	
Mr. Naythan D'Cunha	Student Nominee	



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## RESOLUTION

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SLSC1003

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	<i>Indu Anna George</i> 3/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	<i>K. Iyer</i>
Dr. Sohrab Dalal	Subject Expert	<i>S. Dalal</i>
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	<i>R. Pardiwala</i>
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	<i>Samyuktha Rajan</i>
Mr. Naythan D'Cunha	Student Nominee	<i>Naythan D'Cunha</i>



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## RESOLUTION

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SLSC1004

Name	Designation	Signature
Dr. Nandita Mangalore	Head, Department of Life Science and Biochemistry	
Dr. Indu George	University Representative	Indu Anna George 31/3/2018
Dr. Priya Sundarrajan	Senior Teacher	
Dr. Radhika Tendulkar	Senior Teacher	
Dr. Krishna Iyer	Subject Expert	K. Krishna Iyer
Dr. Sohrab Dalal	Subject Expert	S. Sohrab Dalal
Dr. Vainav Patel	Subject Expert	
Dr. Rashneh Pardiwala	Industry Professional (Applied Component)	R. Pardiwala
Dr. Richa Richy	Industry Professional	
Dr. Shailesh Sonar	Industry Professional	
Ms. Samyuktha Rajan	Student Nominee	Samyuktha Rajan
Mr. Naythan D'Cunha	Student Nominee	Naythan D'Cunha



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**2016-2017**

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**Department of Life Science and Biochemistry**  
**St. Xavier's College (Autonomous)**

The Principal, Dr. Agnelo Menezes had instructed Dr. Nandita Mangalore, Head, Department of Life Science and Biochemistry to hold the Board of Studies (BOS) meeting only if there were changes in the syllabus. As there were no changes in the syllabi, the BOS meetings were not held for either Life Science or Biochemistry in the academic year 2016-17.

*N. Mangalore*  
12/04/17

Head and Associate Professor,  
Department of Life Science and Biochemistry.



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*A. Menezes*

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**2015-2016**



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**DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY**  
**ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI 400001**

**AGENDA FOR THE MEETING OF THE BOARD OF STUDIES FOR LIFE**  
**SCIENCE AND BOARD OF STUDIES OF BIOCHEMISTRY**

**1<sup>st</sup> August 2015**

1. Introduction of New members
2. Syllabii:
  - a. UG: change in marks distribution in S.LSC.6.04 practicals. Project = 30 marks End Semester (Earlier 15 marks)
  - b. PG:
    - Project over two semesters. Assessment in semester IV.
    - Discontinuation of Friday internship
3. Display of exam papers (End Semester March 2015 and 1<sup>st</sup> C.I.A. July 2015)
4. Student members' input



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DEPARTMENT OF LIFE SCIENCE AND BIOCHEMISTRY  
ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI - 400001

Board of Studies Meeting - Life Science

1<sup>st</sup> August, 2015

### Attendance of Members

Board of Studies for Life Science	Signature
1. Dr. B. L. Jadhav	ABSENT
2. Dr. Shubha Tole	<i>Shubha Tole</i>
3. Dr. Deepak Modi	<i>D. N. Modi</i>
4. Dr. Krishna Iyer	<i>Krishna Iyer</i>
5. Dr. Rashneh Pardiwala	ABSENT
6. Dr. Laxmi Rao	ABSENT
7. Dr. Nandita Mangalore	<i>N. Mangalore</i>
8. Dr. Radiya Pacha Gupta	<i>Radiya Pacha Gupta</i>
9. Dr. Seema Das	<i>Seema Das</i>
10. Adithya Sarma	<i>A. Sarma</i>
11. Kaveri Vaidya	<i>Kaveri Vaidya</i>

*[Signature]*

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### Minutes of the BOS held on 1-08-2015

Dr. NM started the meeting by asking the student members to introduce themselves. The outside experts also introduced themselves. This was a joint meeting of both the life Science and the Biochemistry board and the quorum was complete as there were seven members present in each of the boards. Minutes of the last BOS had already been circulated via email. The Life Science minutes were proposed by Dr. KI and Dr. ST and seconded by Dr. DM. The Biochemistry minutes were proposed by Dr. AN and seconded by Dr. CV.

The Life Science board passed the proposal of allocating 30 marks instead of 15 to the project in 6.04 practical paper. The external examiner will sit through the presentation and mark it.

Dr. ST opposed the 5 marks allocated for the journal and a discussion ensued on this. Drs. NM, SD & RPG said that they also felt the same but this was a college policy. ST suggested a reduction or minimization of these marks and asked as to how were the marks awarded. NM told her that attendance, quality of graphs and writing of results and interpretation were considered. KI told how marking of journals was done in his institute. For each lab turn that the students come for, they are given ten marks based on attendance, lab work and writing the expt. Then it is averaged out and converted to five marks, thus the year long performance is accounted for. The students also had an opinion on this—Shravan said that the 5M were important as these were given for the way they tabulate their results etc. Kaveri suggested reducing the marks to 2. Laxmi opined that the marks were important as the results have to be calculated and interpreted. Aditya also said that drawing a conclusion and inference was important.


ST asked as to what were the remaining practical marks for and she was informed of the same by NM.

The discontinuation of the Friday brigade was passed by the BOS after a discussion.

NM asked all present if there were any options for a 2month internship for students as it was not possible for them to do a 4-6 month project. Drs. ST, KI and DM said that this was difficult. KI said that he will check it out. Aditya said that the GPA score was considered everywhere for projects etc and NM said that our students lose out as their scores are not as high as most other universities. ST said that she doesn't look at GPA but at how well the student has written the SOP etc. She further added that work in her lab can't be short term and that she takes only those ones who are very interested. DM and ST explained how 2 months was a very short period for working in a lab. Aditya asked if the students could help in media preparation etc and was told by NM that this was not possible but the honours course gives them an opportunity to work. Also, the projects in both Life Science and Biochemistry develops a research culture and thinking ability. ST suggested that the students be asked to prepare media and then checking it out. RPG said that this was being done at the FY level and that the students were being continuously checked for techniques. KI said that they encourage their UGs to spend time in the



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labs during vacations and work with the Ph.D students. The UGs don't have an independent project but the guides might make them a part of the experiment and based on their work, even include their names in a publication. NM said that on RPG's idea, we are thinking of keeping the labs open during vacations for the PG students. ST suggested having a journal club where papers could be read with TIFR students—could be the same paper year after year. DM said that for an exam in DB at his institute, he had asked the students to write a review paper and then tried to publish it.

ST asked the students if they would like to write a review, Shravan said that they were working on one such review on zebra fish. DM mentioned that most of the scientists are resistant to students as they need too much looking after. ST said that their primary aim was to take science forward and they could not dilute it with short term projects/work.

Student's input about syllabi

Shravan said that the FY 1.02 paper on genetics and evolution was too simple and not challenging, he suggested including modern theories and taxonomy.

Laxmi said that they do taxonomy of microflora in 2<sup>nd</sup> sem, so why not other kingdoms also. Aditya supported her by saying that taxonomy helps to compare and would also help in comparative physiology. Shravan said that physiology in the 3<sup>rd</sup> and 4<sup>th</sup> sem focused on human physiology and was not really comparative. He suggested either doing comparative in details or changing it to human only. Aditya said that as model organisms are non-human, more of comparative should be there. NM asked if doing human physio in one sem and comparative in the other help. Shravan said that it won't really help as it will get too packed. Shravan said that they had talked to all students and this was a consensus. He further added that at the end of comparative physio embryology was taught which was disconnected from other physio. Everything else was human but development was of frog. Suggestion from students- push the embryology to TY DB. ST suggested that the students read the book entitled "one gene per chromosome". Shravan said that Gilbert's essays were being read in class. The students also said that very little of plant hormones was being done. They suggested either doing more or knocking it out altogether as it was left a little incomplete.

The students suggested that in the microbiology paper 3.03, the public health aspect was a little too general and suggested pushing it to biostats and related problems be done there. They also said that there were no problems asked in microbiology in the exams. ST suggested that the students could look up available hospital data and compare this. SK, KI and AN said that most hospitals and private labs do not share data. ST suggested using RTI for getting data.

Shravan said that the biostats course in SY was not very challenging, there were lots of formulae but applications not challenging enough. The students suggested having less focus on formulae, formulae sheets could be given in exams as they were spending more time on memorizing the formulae. NM said that some changes could be made. Aditya suggested bringing in some clinical





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application questions or case-based studies in exams. He further requested for not asking very descriptive questions in exams and not just book-questions.

The students felt that the applied component of environmental Science was not very engaging and was very dry. They suggested having bioinformatics atleast for one semester. St suggested that the best way to teach bioinfo would be to teach the basics and then give a project. Shravan said that zoology had bioinfo and was told by RPG & SD that we also have it. Kaveri suggested having computational biology too. RPG suggested keeping these as life Science subjects and not applied component. ST and DM asked as to why ES was still there and they felt that bioinfo was very important because of its usage now.

Shravan said that the biochemistry taught in sem 3 & 5 was more or less the same though more detailed and that the basics were repeated. NM replied by saying that this was inevitable as the biochem course in TY is open to other depts. Like zoology, microbiology and botany also. The students suggested shrinking the biochem syllabus in SY to which NM said that as the TY 6 units do not study biochem, it has to be done in details at the SY level.

The students said that the microbio in 2.02 was too vast and suggested clubbing the taxonomy to classification of microbes. They suggested doing only modern theories of evolution.

ST remarked that she had never seen such a level of communication between teachers and students.

KI remarked that don't shift back and forth (based on the student's comments) but take bioinfo and suggestions regarding formulae in biostats.

ST suggested book readings in vacations.

NM said that we don't have trained teachers for bioinfo.

SK said that Haffkins biopharmacy was involved in making vaccines, sera etc and students could be shifted there for 1-2 weeks. NM said that she will contact him in April and asked if PG students could also join. ST said that as UGs appear to be better, they should not be held back.

It was suggested by ST, NM and KI to set questions at different levels of difficulty for exams and induce students to answer the difficult ones. KI suggested having bonus questions and transferring the marks anywhere else.

CV, ST, DM and KI suggested picking a mix of 'good' and 'not-so-good' students for the BOS.

AN suggested letting the class choose a class representative/s-then maybe the lower-grade students will always be there.



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## 2014-2015

Dates of BOS

1. 26<sup>th</sup> July, 2014
2. 13<sup>th</sup> March 2015



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DEPARTMENT OF LIFE SCIENCES AND BIOCHEMISTRY  
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Board of Studies (Life Sciences) Meeting


26th July 2014

### Attendance of Members

Board of Studies for Life Science	Signature
1. Dr. B.L Jadhav	ABSENT
2. Dr. Shubha Tole	ABSENT
3. Dr. Deepak Modi	D. N. Modi
4. Dr. Krishna Iyer	Krishna Iyer
5. Dr. Rashneh Pardiwala	Rashneh Pardiwala
6. Dr. Laxmi Rao	Laxmi Rao
7. Dr. Harish Ahuja	Harish Ahuja
8. Dr. Nandita Mangalore	Nandita Mangalore
9. Dr. Radiya Pacha Gupta	Radiya Pacha Gupta
10. Dr. Seema Das	Seema Das
11. Ms. Aishwarya Acharya	Aishwarya Acharya
12. Ms. Ambika Natesan	Ambika Natesan



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**MINUTES OF THE LIFE SCIENCE BOARD OF STUDIES (B.O.S.) MEETING**

**HELD ON 26/07/2014 at 11:00 am.**

Dr. Jadhav and Dr. Shubha Tole were unable to attend.

1. The meeting began with an introduction of the new student members and with the rest of the panel introducing themselves to the students. The Minutes of the last BOS, held on 5-10-2013 read by NM, approved by the board and passed.
  2. Report of the implementation of suggestions made in the last BOS:
    - Replacement of the Applied Component Environmental Science: The principal did not grant permission for ENV, Sc to be replaced by Forensics as it would affect the enrolment in the Forensics Diploma course currently being run by the Dept of Zoology.
    - Food Science and Technology was suggested by the department and it is being looked into by the department.
    - Something fresh and new is what the students wanted – students were asked to take this back and suggest alternate Applied Component possibilities.
    - Practicals with chick retina were not conducted. They are to be standardized this year.
    - Dr. Rashneh was to be contacted for help with guest speaker in Env. Sc., however this was not done. Dr. Rasneh Pardiwala once again offered to get Guest speakers for lectures on Environmental Science (ES) and to help with PowerPoint – we will tap her this year
  3. New Suggestions from BOS for an applied component:
    - Two different Applied Components could be held in 2 different semesters – one suggestion, while Dr. Rao felt the Same Applied Component in both semesters would be better.
    - It was pointed out that since ES is to be integrated into regular curriculum in schools and Junior College, there might be a slight easing up on the overall exposure in earlier years and hence we might see a resurgence of interest in the study of environmental science.
    - Options: Stem cells, Pleuripotency, Enterpreneurship, Pharmaceutical Biotechnology, Translational research, Health care and Pharmacy.  
Dr. Iyer promised to send the University syllabus of Pharmaceutical Biotechnology. He also suggested that it would be less taxing on the dept as the skill set required is available and that many books were available to teach the topics. From gene therapy to therapeutics.
    - Stem cells – Dr Ahuja felt Practicals could be done in collaboration with hospitals. IVF applications. Will help with jobs also.  
The dept., however felt that with 60-65 students, Stem cells might be difficult to manage in the TYBSc, but in M.Sc. maybe.
    - Ambika Natesan (Student): More of theoretical knowledge. If Applied Component could be more practical based
    - Aishwarya Acharya (student): Cognitive science. With stem cells practicals – would be very different. The difficulty in carrying this out with large nos was explained.
- Other suggestions for Applied components include : Diagnostic tools, Diagnostic tests for blood grouping, etc. , Microchip technology, Toxicology, Medical Biotechnology, Health care and Biotechnology, Immobilisation ,





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- Dr Modi suggested : Recombinant protein production  
Offered to give his constructs  
Dose dependent induction etc. (3 day experiment)  
Blue white screening done  
Replicate some M.Sc. practicals
  - However, the general feeling was that something absolutely new should not be started.
  - Students liked Pharmaceutical Biotechnology. KI to help with syllabi along with the practicals.
4. Dr. Nandita explained the initiation of a weekly visit by students (MSc) to an assigned lab at TIFR, NIRRH. The Evaluation of students was also explained
- A minimum of 21 weeks of 1 day/ week per semester.
  - For next year, Dr. Modi would like to talk about this venture 's continuation at NIRRH. He requested that we take a feedback from students about the labs to get an honest opinion of the usefulness of the experience.  
DM to ask ACTREC will speak to some people and let us know if there are possibilities there.
5. Entrepreneurship unit for MSc students was conducted by Prof. Prashant Ratnaparkhi (PR) more as a project -based module. The Principal also wants this to be done in each program.  
NM informed the Board that Prof. Neelam from the BMS dept., who helped design the unit, was willing to take a few lectures for the course.  
Dr. Rashneeh would be happy to share her expertise and contacts (Mohammad Yunis) Yale University on Entrepreneurship (1-2 lectures) for the teaching of the entrepreneurship part of the course.
6. M.Sc. Practicals:
- Practicals now independent of the theory in that paper
  - Less usage of sterile work in the 1<sup>st</sup> semester
  - Dr. Modi was Happy with the change but felt it needed even more condensing and relatedness. There were discussions on what experiments could be shifted to ensure a smoother flow and a continuum. For eg. Do everything pertaining to Protein Chemistry together. Depth will be welcomed. Deep focusing certain topics

Some of the suggestions that were made:

DM: - A start to finish package

- Club 4 with 9 & 8

NaK ATPase – Protein Chemistry includes everything

- 5 & 12 together DM in the 2<sup>nd</sup> semester

- 6 combine with 15 & 16

- M.Sc. II do only molecular

- More Bioinformatics

- More Molecular Biology

- Order very haphazard

- Add Statistics in Semester I

- Protein & DNA in Semester I



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- Cell Biology and Histology in Semester I
- In Semester II – Cell Biology
- Physiology in Semester II
- KI to write and give his suggestion
- Protein chemistry
  - Molecular Biology
- DM: Expand on some things rather than do more superficially. Make Protein Chemistry stronger
- Remove no. 5 Cell Biology
  - Cytometry data remove – too complex
  - Human Physiology into Semester III along with Hematology
  - Move i to iv of 13 to Semester I
  - Add apoptosis in 12 – propidium iodide, Et Br
  - Induce apoptosis & see
  - DM will get Histology slides in one semester time
  - HA – do only normal ECG
  - Spillover of Semester I can go into Semester 2 – Protein purification continued
- The students gave an account of their work abroad.
- DM: Do protein chemistry the whole year
- Syllabus looks more focussed
  - For masters be more specific and focussed
  - Some books for UG & PG – do more at PG – be more focussed. Have more breathing space – take things to the end.
- KI: Why lock the syllabus forever? Why get it approved first?
- Separation and purification of biomolecules rather than specifying protein or DNA
- DM: Do mammalian cell culture instead – why specify all this?
- Make it focussed. Overburdening with a very broad canvas.
- Microbiology – full
- Protein Chemistry – full
- Molecular Biology – full
- Let the rest be
- KI: How to make a choice of a pipette – teach along with the practical on it.
- Teach them to buy equipment
  - Maybe add into research methodology
  - Reading material safety, about chemicals & apparatus
- HA: Waste disposal

#### 7. Discussion on the MSc II project.

It was suggested that the marks assigned to the project be raised from 120 marks to 200 marks, so that the entire end semester evaluation of practicals will be for the project – All agreed

Issues that could be included-


- Costing of a project in the project
  - Students could publish in college research journal
- Aim is to develop a research culture

Suggestions:

- Don't change projects every year. Repetition of last year work. That will help check the results and be more useful for a paper. Define tools that are used in projects – teach them only the skills needed



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- Give a minimum that has to be done
- Give marks to students for asking questions
- Get a feedback from students regular project coursework
- Give no of hours of work expected for project - that gives a guideline to examiners.

Selection of students: Have a write up of the project – let the students come and sign up for the one they are interested in.

- Interview by PI students talk to PIs. The students can give priorities – you don't need to stick to it. Then you pick up the student
- PIs give presentations and the students choose

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**Agenda for the meeting March 2015**


1. Approve changes in the syllabi of:
  - i) MSc I & II practical - practicals that were decided in the previous meeting were conducted and have been entered in the syllabus. This has to be ratified.
  - ii) MSc physiology & disorders – a merging of the papers on physiology and human disorders, so that disorders are taught along with the associated physiology.
  - iii) TY Life science Immunology
2. Reorganizing the course work per semester for the MSc programme due to the changes we plan to institute in Physiology
3. Create a sub committee to review research proposals that are sent out from the department, prior to their approval by the research committee of the college
  - i) Composition of committee: HoD, 2 senior teachers of the dept and one representative from the board.
  - ii) BOS representative to be nominated and seconded for selection.
4. Review the continuance of the Friday brigade from November 2015
  - i) Student feedback summary
  - ii) Staff feedback summary
5. Question papers of the previous semester to be displayed

Papers in file: Agenda

MSc practical sheet  
Reorganized course work – MSc  
Student feedback on Friday brigade



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Board of Studies (Life Sciences) Meeting

13<sup>th</sup> March 2015

Attendance of Members

Board of Studies for Life Science	Signature
1. Dr. B.L Jadhav	ABSENT
2. Dr. Shubha Tole	ABSENT
3. Dr. Deepak Modi	ABSENT
4. Dr. Krishna Iyer	ABSENT
5. Dr. Rashneh Pardiwala	
6. Dr. Laxmi Rao	ABSENT
7. Dr. Harish Ahuja	ABSENT
8. Dr. Nandita Mangalore	
9. Dr. Radiya Pacha Gupta	ABSENT
10. Dr. Seema Das	
11. Ms. Aishwarya Acharya	ABSENT
12. Ms. Ambika Natesan	ABSENT



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## Minutes of the Board of Studies Meeting of the Department of Life Science and Biochemistry held on 13.03.2015 at 2.00 pm.

The meeting was adjourned for 15 minutes at 2:15 p.m. due to lack of quorum and was restarted at 2:30 p.m. with the existing quorum.

Dr. Nandita Mangalore chaired the meeting, Drs. Rashne Pardiwala and Seema Das were the other members present.

1. Minutes of the BOS for Life Science held on the 26<sup>th</sup> July 2014 were approved and passed by the board. ✓
2. The changes incorporated in the M.Sc. practical syllabi were shared. These changes had been made on the suggestions of the members in the last BOS. Practicals were arranged in three categories so that students could be trained in certain fields. The areas chosen for training included protein purification, cell biology, molecular biology and forensic science.
3. In M.Sc. part I theory, physiology done in semester 1 and human disorders done in semester 4 were merged to create two courses in physiology, I & II to be taught in semesters II and II respectively. This was done without any change in content and just to ensure that the disorders related to a system are dealt with along with the physiology.
4. In the immunology paper of the TY, the topic on cell mediated immunity has been shifted from unit II to unit III. This was required because of an imbalance in the weightage of marks of units II and III. There was no change in content.
5. M.Sc. course rearrangement: The M.Sc. course work over two years was re-organized to tackle the fact that as students came in from diverse specializations, some courses were more difficult for them to comprehend. Physiology being one of the courses was hence better introduced after the students had settled into college and got used to the system. The course on microbiology was shifted to Semester II following a request from the current M.Sc. I students to hold the theory in the same semester as the microbiology practicals. A summary of the new organization is as below:





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M.Sc.

**COURSE DISTRIBUTION OVER THE 4 SEMESTERS**  
**for 2015-16 onwards**

<b>COURSE NO</b>	<b>CURRENT DISTRIBUTION 2014-15</b>	<b>COURSE NO</b>	<b>PROPOSED DISTRIBUTION 2015-16</b>
1.01	Cell biology	1.01	Genetics and Evolution
1.02	Physiology	1.02	IPR and Scientific comm skills
1.03	Biochemistry	1.03	Biochemistry
1.04	Maths & Statistics	1.04	Maths & Statistics
2.01	Genetics and Evolution	2.01	Cell biology
2.02	IPR and Scientific comm skills	2.02	Physiology I
2.03	Immunology	2.03	Immunology
2.04	Analytical techniques	2.04	Microbial diseases
3.01	Human genetics	3.01	Clinical microbiology
3.02	Molecular Biology	3.02	Physiology II
3.03	Microbial diseases	3.03	Molecular Biology
3.04	Diagnostics	3.04	Analytical techniques
4.01	Human disorders	4.01	Human genetics
4.02	Pharma	4.02	Pharma
4.03	Clinical microbiology	4.03	Diagnostics
4.04	Applied biology	4.04	Applied biology
<b>PRACTICALS</b>			
1.PR	Basics + protein purification	3.PR	Cell Biology
2.PR	Microbiology	4.PR	Clinical Biochemistry Forensics Project



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It was mentioned that there were not many practicals in the Pharmaceuticals and Naturacueticals paper which was slotted for semester IV.

The 4<sup>th</sup> semester lab work consisted mainly of practicals in forensics and bioinformatics. It was suggested that the bioinformatics practicals could be a take-home assignments which would be then analysed in the bioinformatics lab for the exams.

5. Friday Internship: Dr. Nandita explained that the M.Sc. I and II students were given a questionnaire to fill out regarding the Friday internship. Students' feedback regarding the Friday internship was projected and explained by Dr. Nandita Mangalore and Dr. Seema Das. A summary of student feedback:

- 62% students felt that the internship should be held for only one semester /discontinued
- 47% preferred working on a summer project for two months (either with one semester of Friday internship or without any Friday internship)

Dr. Nandita Mangalore conveyed Dr. Shubha Tole's views on reducing the Friday internship to one semester. Dr. Tole, in a telephonic conversation earlier in the day, had said that it would not possible to reduce the internship to one semester, but that it could be brought down to an 8-month stint instead of the current 11-months. Dr. Nandita Mangalore also shared the views of the faculty on the issue. The faculty of the department unanimously felt that the second semester of the two-semester internship did not significantly contribute to the academic growth of the students. The experience of the last year led them to believe that the students needed to spend more time and effort on the 120 mark research project they would have to complete. Advantages and disadvantages of this internship were discussed and the following points emerged:

The advantages include

- getting a pipeline into these prestigious institutes,
- learning a technique or two and achieving a fair amount of proficiency in it
- the opportunity to listen to seminars etc and interact with the researchers.

The main disadvantages are that:

- several students are not really interested in such work and this is forced on them resulting in poor output;
- several of those who are enthused initially, lose interest after they have perfected the skill/ technique

Dr. Rashneh- Compared the summer internship to the Friday one. She felt that as the summer internship would not be compulsory all the students might not get placed. Under such circumstances, she wondered if it might be better for the students do at least the Friday internship and learn something rather than nothing at all.



*Shinde*

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Dr. Nandita explained that the project is compulsory and it will help especially the weaker students if they could start their project work in the 2<sup>nd</sup> sem.

Dr. Rashneh asked if it was appropriate to tweak the system based on a on a 12- 18 month performance and feedback? Perhaps, she opined, Next year, all the students might be very bright and might be able to handle the internship well.

Dr. Nandita explained that there will always be 'quota' students who are generally the weaker lot. Also, students from all biological sciences are eligible, which is a problem when teaching some subjects....like physiology/microbiology. There were also some students with a language problem. It all becomes too much to handle for such students.

Dr. Rashneh asked if the Friday internship was compulsory or an option.

Dr. Nandita explained that we were hence running out of options as most institutes do not want a one day per week arrangement. In Addition, in a continuous internship, they are on a project and don't have to work like technicians. The dept. feels that with the extra time available (after doing away with the Friday internship) the projects can be better handled by the students. The dept has two UGC projects already (Drs. Seema Das and Priya S.) and one more is to come (Dr. Bhaskar Saha)-so it is better to use the money and expertise for projects where the students will acquire several skills. Also many of the younger staff are writing projects.

Following this discussion, Dr. Rashneh supported doing away with the Friday internship as now there seemed to be a better option – that of projects, and strengthening projects would require a lot of focus. She suggested that help could be taken from the institutes for work related to the projects so that all ties with the institutes are not severed. Dr. Nandita said that to give the students a feel of research labs, they could be asked to choose one from the few chosen ones and taken there for a visit. The students will also be encouraged to present their research work outside as a poster or paper. We are willing to try out new things- the Friday brigade was tried out for two years.

6. Dr Rashneh asked if Xaviers could do independent analysis of soil and water samples to which Dr. Nandita replied in the affirmative. There would be a charge for this and might not be valid for publications etc as our labs not certified. A discussion then ensued on if this could be strengthened. It was proposed that this sampling could be made a part of the project work in the TY in the Applied Component or the 6.04 practical papers. It was also recommended that the project be made into a 30M one instead of the current 15M in the end semester exam; three/four experiments to be done and asked for the 20M CIA test. This issue will be considered by the department before implementation.
7. The constitution and composition of the research committee was explained by Dr. Nandita and possible expert/s from the BOS were discussed.



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## DEPARTMENT OF LIFE SCIENCES AND BIOCHEMISTRY ST. XAVIER'S COLLEGE (AUTONOMOUS), MUMBAI - 400001.

Board of Studies (Life Sciences) Meeting  
13<sup>TH</sup> March October, 2015

1. **Dr. B.L. Jadhav**  
Professor and Head  
University Department of Life Sciences,  
University of Mumbai – Kalina Campus,  
Santacruz, Mumbai.
2. **Dr. Shubha Tole**  
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