

MINUTES OF THE FIRST MEETING OF THE BOARD OF STUDY OF NBRC HELD ON 5th MARCH 2004 AT 4.00 P.M. AT NATIONAL BRAIN RESEARCH CENTRE, MANESAR.

The First meeting of the Board of Study of NBRC was held at NBRC, Manesar on 5th March 2004. The following members were attended the meeting.

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| 1. Prof. Vijayalakshmi Ravindranath | : | Chairperson |
| 2. Dr. Shashi Wadhwa | : | Member |
| 3. Dr. K. Muralidhar | : | Member |
| 4. Dr. Neeraj Jain | : | Member |
| 5. Dr. Rema Velayudhan | : | Member |
| 6. Dr. P.K. Roy | : | Member |
| 7. Dr. Aditya Murthy | : | Member |
| 8. Dr. Prabodha Kumar Swain | : | Member |
| 9. Dr. Nihar Ranjan Jana | : | Member |
| 10. Dr. Soumya Iyengar | : | Member |
| 11. Dr. Pankaj Seth | : | Member |
| 12. Maj. B V Ram Kumar | : | Member Secretary |

Item No. 1 : Welcome by Chairperson

Prof. Vijayalakshmi Ravindranath, chairperson welcomed all the members to the first meeting of the Board of studies. She introduced the expert members Prof. Muralidhar of Delhi University and Prof. Shashi Wadhwa of AIIMS to all the faculty members of NBRC. She introduced the faculty of NBRC to the expert members and explained their area of research activities.

Item No. 2 : Approval of Panel of examiners for the evaluation of the Ph.D. thesis of the following candidates :

- **Mr. Harish V. Pai**
- **Mr. Rajappa S. Kenchappa**
- **Ms. Latha Diwakar**

The chairperson presented before the members the list of panel of examiners for evaluation of the Ph.D. thesis submitted by Mr. Harish V. Pai and Mr. Rajappa S. Kenchappa. She further informed the members that the list of panel of examiners for Ms. Latha Diwakar is being prepared and will be

presented before the Board of Studies Committee shortly. She said the above three students have worked under her at NIMHANS, Bangalore and had subsequently shifted to NBRC following her joining in NBRC as Director. A special permission was sought from Academic Council taking into account the research work carried out at NIMHANS and for their submission of the Ph.D. thesis. The panel of examiners after approval by the Board of Studies will be put up to Prof. P.N. Tandon, Chairman SAC, NBRC who will select the examiners from the approved panel. The committee discussed on the proposed panel of examiners and approved the same.

Dr. Muralidhar suggested that the synopsis of the dissertation could be submitted by the students so that they can be sent to the potential examiners. This would help the examiners in the decision to evaluate the thesis. The members approved the above suggestions.

Item No. 3 : Approval of the Panel of examiners for the comprehensive viva-voce examination for the Ph.D. course work.

During discussion on the above subject Dr. Muralidhar felt there was no need to grade the comprehensive viva-voce at the end of the first year, since the students were already being graded based on the performance in the individual courses. The members after protracted discussion on the above felt that the need for viva-voce was justified since it would give a chance for evaluation of students by external examiners. Further, the need for a public viva-voce after submission of thesis was discussed. Dr. Muralidhar felt that this could be waived once the student had been cleared by the panel of thesis examiners. This will also help reduce delays. The members discussed the above suggestion and recommended that the decision for having public viva could be left as an option to the external examiner as is being done in many Universities. The chairman indicated that this matter would be put up to the Academic Council.

The committee then deliberated on the composition of the doctoral committees. Dr. Muralidhar felt there was no need for a co-supervisor since

the purpose of the doctoral committee was one of collective responsibility. However, the other members held the view that a co-supervisor could facilitate the research progress of the students in case of protracted absence of the Supervisor for any reason. The committee also decided that the doctoral committees in general should be constituted in a manner to avoid potential conflict of professional and personal interests in order to safe-guard the interest of the students. In this regard it was felt that spouses / family members should not, as far as possible, be in the same doctoral committee. Accordingly, certain changes have been made in the proposed list of panel of examiners for conducting of viva-voce for current year Ph.D. students and also the doctoral committees for registered students. The amended list is enclosed as Annexure – A.

The members approved the revised list of examiners as per Annexure – A.

Item No. 4 : Any other item with the permission of the chair.

The committee with the permission of the chair further discussed on the course work and the mode of setting up of examinations. The members felt that although neuroscience course work was very multi disciplinary, there was a need to enforce some degree of uniformity in the examinations. The Board of Studies proposed setting up of a moderating committee having representation from all NBRC Scientists. This committee would set up the questions for all final examinations collectively. Further it was recommended that the type of questions set should be uniform for all courses and be diverse in nature such that they evaluate different cognitive dimensions such as memory recall, analytical reasoning etc. This could be done by including essay type questions, multiple choice questions and problem solving etc. in all papers. The committee further recorded that the recommendation of the Board of Studies be ratified in the next Academic Council meeting.

As there were no other points, the meeting ended with vote of thanks.

ANNEXURE – A

1. Panel of Examiners for conducting viva-voce for current first year Ph.D. students :

External	Internal
Dr. V. Mohan Kumar	Dr. Neeraj Jan
Dr. Sumantra Chaterji	Dr. Pankaj Seth
Dr. Vidita Vaidya	Dr. Prabodh Swain
	Dr. Soumya Iyengar (In case of absentee)

2. Ph.D. Committees for registered students

Mr. Reddy Peera Prof. V. Ravindranath (Supervisor) Dr. Shyamala Mani (Co-Supervisor) Dr. Pankaj Seth Dr. Prabodha Swain	Mr. Supriya Ray Dr. Aditya Murthy (Supervisor) Dr. Neeraj Jain (Co-Supervisor) Dr. Soumya Iyengar Dr. P.K. Roy
Mr. Zia Uddeen Dr. Rema Velayudhan (Supervisor) Dr. P.K. Roy (Co-Supervisor) Dr. Aditya Murthy Dr. Prabodh Swain	Ms. Priyanka Dikshit Dr. Nihar Ranja Jana (Supervisor) Dr. Prabodha Swain (Co-Supervisor) Dr. Pankaj Seth Dr. Soumya Iyengar
Mr. Anand Goswami Dr. Nihar Ranjan Jana (Supervisor) Prof. V. Ravindranath (Co-Supervisor) Dr. Rema Velayudhan Dr. Soumya Iyengar	Ms. Rashmi Mishra Dr. Shyamala Mani (Supervisor) Dr. Rema Velayudhan (Co-Supervisor) Prof. V. Ravindranath Dr. Nihar Ranjan Jana
Mr. Manoj Kumar Dr. Shyamala Mani (Supervisor) Dr. Rema Velayudhan (Co-Supervisor) Prof. V. Ravindranath Dr. Prabhodha Swain	Mr. Sandeep Kumar Dr. Prabhodha Swain (Supervisor) Dr. Nihar Ranjan Jana (Co-Supervisor) Dr. Rema Velayudhan Dr. Soumya Iyengar
Ms. Latika Singh Dr. Nandini C. Singh (Supervisor) Dr. Aditya Murthy (Co-Supervisor) Dr. P.K. Roy Dr. Soumya Iyengar	

-Minutes of the 2nd Board of Studies Committee meeting of NBRC held on 29th November, 2004 at the Conference Room of NBRC

The 2nd meeting of the Board of Studies Committee of NBRC was held at NBRC on 29th November, 2004. The following members attended the meeting:-

1.	Prof. V. Ravindranath Director, NBRC	Chairperson
2.	Prof. Shashi Wadhwa AIIMS, New Delhi	Member
3.	Prof. K. Muralidhar University of Delhi	Member
4.	Dr. Neeraj Jain Scientist V, NBRC	Member
5.	Dr. V. Rema Scientist V, NBRC	Member
6.	Dr. P.K. Roy Scientist V, NBRC	Member
7.	Dr. Pankaj Seth Scientist IV, NBRC	Member
8.	Dr. Aditya Murthy Scientist III, NBRC	Member
9.	Dr. Nihar R. Jana Scientist III, NBRC	Member
10.	Dr. P.K. Swain Scientist III, NBRC	Member
11.	Dr. Soumya Iyengar Scientist III, NBRC	Member
12.	Dr. Nandini C. Singh Scientist III, NBRC	Member
13.	Dr. Shyamala Mani Scientist III, NBRC	Member
14.	Dr. Anirban Basu Scientist III, NBRC	Member
15.	Maj. B V Ram Kumar Administrative Officer, NBRC	

Item 1: Welcome by Chairperson

Prof. Vijayalakshmi Ravindranath, Chairperson, Board of Studies welcomed all the members to the 2nd meeting of the Board of Studies of NBRC. She informed the members that the Academic activities of NBRC are going on smoothly and the present in-take of M.Sc. and Ph.D. students are very good. In addition, to supplement the in-house teaching, visiting faculty from out-side are being invited to take classes for M.Sc. and Ph.D. course as well. She thanked all the external expert members for the valuable advice and contribution in running the academic course in NBRC and requested them to continue to guide NBRC in the same way. She briefed the external members about the existing selection procedure being adopted in NBRC, which was well appreciated by the members. She informed the members that a total of 10 M.Sc. students and 13 Ph.D. students have been selected in the present Academic year.

She then requested the members to put their views or comments, if any. Given the excellent quality of MSc students entering into the programme, Dr. Muralidhar suggested the possibility of providing an integrated Msc-Ph.D programme in future that could encourage the MSc students to continue in the Ph.D programme. To facilitate the creation of human resources in neuroscience in India he suggested the possibility of increasing the intake of students as well. Director mentioned that this could be certainly considered after the 1st batch of

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M.Sc. pass out. With regard to conducting the practicals, Dr. P.K. Swain said that experiments were getting difficult to conduct due to the paucity of time. The members after discussion felt that this problem could be resolved if the students were encouraged to work on Saturday/ extra hours so that the lab work/practicals could be completed. To facilitate effective utilization of time the Chairperson suggested to re-schedule the Journal Club/ seminars to avoid potential conflicts with practicals. The Chairperson also expressed her concerns regarding the lab rotations of Ph.D students and felt the need to strictly enforce discipline. In this regard members felt that students need to be explicitly told that poor grades could have negative consequences such as potentially delaying their date of registration and/or entry into labs. The members also discussed the issue relating to inclusion of certain more external examiners names to the existing Ph.D. first year comprehensive viva-voce list of examiners. The following names have been recommended to be included:-

Dr. T.S. Roy

Dr. S. Tole

Dr. Ishan Patro

Dr. R. Manchanda

Item 2: Approval of the minutes of the First meeting of the Board of Studies

The minutes of the first meeting of the Board of Studies were confirmed.

Item 3: Action taken report on the recommendations made in the First Meeting of Board of Studies

The Chairperson informed that the Ph.D. thesis of Mr. Rajappa S. Kenchappa and Mr. Harish V. Pai were submitted and awarded the Ph.D. degree by NBRC. Ms. Latha Diwakar has submitted her thesis for award of Ph.D. The panel of examiners for Ms. Latha Diwakar is being put up in the present Board of Studies meeting for approval. Further the recommendation regarding the conduct of viva-voce for award of Ph.D. is being implemented. Also the recommendation of Board of Studies regarding setting-up of a Moderating Committee for setting up of question papers for all final examinations is being implemented. In this regard Prof. Murlidhar emphasized the need to formalize the pattern of examination questions. This could be done as part of the regulations that governed academic activities in NBRC. In this regard it was suggested that the style of questions being used by Delhi University could provide a prototype for NBRC.

Item 4: Approval for making amendments to the Para 'C' of the Ph.D. guidelines regarding approval of panel of examiners.

The Committee discussed the above and approved amending the Para 'C' of the "Thesis and Examiners" of the Ph.D. regulations whereby the Research Supervisor in consultation with the Doctoral Committee shall suggest the panel of examiners to the Chairperson, Board of Studies one year before of the expected date of submission of thesis in place of the existing guidelines which stipulate that the same should be submitted to the Board of Studies (Amended version is enclosed as Annexure 'A'). However, it was suggested that the approved list of panel of examiners subsequently should be informed to the Board of Studies as a report.

Item 5: Adoption of a suitable grading system for M.Sc. course

The members after discussion on the above subject have recommended adoption of the following system of grading for NBRC

Below 50% - Fail

50% – 60% marks - Second Class

60% – and above but less than 75% marks - First Class

75% and above - Distinction

Item 6: Approval of Doctoral Committee for registered candidates

The members discussed on the proposed list of panel committee for Ph.D. registered candidates and approved the

same with change in the committee composition of Ms. Manisha Chugh wherein the name of Dr. Aditya Murthy was proposed as co-supervisor in place of Dr. P.K. Roy and subject to their clearance of viva-voce by the candidate.

Item 7: Adoption of minimum attendance for M.Sc. students as per UGC norms

After discussion of the above, the Committee recommended adoption of a minimum attendance requirement on 75% to enable them to appear in the final examination.

Item 8: Approval of panel of examiners for Ms. Latha Diwakar, Ph.D. student of Prof. Vijayalakshmi Ravindranath

The members discussed list of proposed examiners and approved the same.

Item 9: Proposal for introducing awards/ honours for first in the order of merit in M.Sc. Neuroscience course.

The proposal for introducing awards and honours for M.Sc. students was discussed. It was recommended that based on the performance of the first year, a first and second rank maybe awarded to deserving candidates. It was also recommended that an award for overall best M.Sc. student may be introduced in the form of a gold medal, which should be based on the overall performance of the student in the 2 year course of M.Sc. and would be judged by all the concerned faculty of NBRC. However, the decision for introducing award for Ph.D. students was deferred.

Item 10: Any other item to be taken up with permission of the chair

The Chairperson informed the members regarding the problem being faced by the students who miss out on the mid-term assessment exam due to some genuine medical reasons and asked the members to give their view on this issue. The members after discussion recommended that supplementary mid-term assessment exam could be conducted for the students who miss the same due to genuine medical reasons within 4 weeks from the time of conduct of original examination, provided they qualify the minimum attendance requirement of 75%. Students who do not fulfill the attendance requirement, will have to undertake the course again and appear for the examination when the same is conducted for subsequent course.

As there was no other point, the meeting ended with vote of thanks to the chair.

Minutes of the Third Board of Studies Committee Meeting of NBRC held on 27th July, 2005 in the Conference Room of NBRC, Manesar

The 3rd Meeting of the Board of Studies Committee of NBRC was held at NBRC on 27th July, 2005. The following members attended the meeting:-

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| 1. | Prof. V. Ravindranath
Director, NBRC | Chairperson |
| 2. | Prof. Shashi Wadhwa
AIIMS, New Delhi | Member |
| 3. | Prof. K. Muralidhar
University of Delhi | Member |
| 4. | Dr. Neeraj Jain
Scientist V, NBRC | Member |
| 5. | Dr. V. Rema
Scientist V, NBRC | Member |
| 6. | Dr. P.K. Roy
Scientist V, NBRC | Member |
| 7. | Dr. Pankaj Seth
Scientist IV, NBRC | Member |
| 8. | Dr. Narendar Kumar Dhingra
Scientist – IV, NBRC | Member |
| 9. | Dr. Shiva Kumar Sharma
Scientist – IV, NBRC | Member |
| 8. | Dr. Aditya Murthy
Scientist III, NBRC | Member |
| 9. | Dr. Nihar R. Jana
Scientist III, NBRC | Member |
| 10. | Dr. P.K. Swain
Scientist III, NBRC | Member |
| 11. | Dr. Soumya Iyengar
Scientist III, NBRC | Member |
| 12. | Dr. Nandini C. Singh
Scientist III, NBRC | Member |
| 13. | Dr. Shyamala Mani
Scientist III, NBRC | Member |
| 14. | Dr. Anirban Basu
Scientist III, NBRC | Member |
| 15. | Mr. K.V. S. Kameswara Rao
Registrar, NBRC | |

Item (3)1 : Welcome by Chairperson

Prof. Vijayalakshmi Ravindranath, Chairperson, Board of Studies welcomed all the members to the 3rd meeting of the Board of Studies of NBRC.

Item (3)2 : Confirmation of the Minutes of the Second Meeting of the Board of Studies.

The Minutes of the 2nd Meeting of the Board of Studies were circulated. The Minutes were confirmed, no comments were received.

Item (3)3 : Action Taken Report on the recommendations made in the Second Meeting of Board of Studies

Members of Board of Studies noted the Action Taken on the recommendation in the Second meeting of Board of Studies.

Item (3)4 : Approval for revised syllabus for M.Sc. and Ph.D. course work.

The Committee Members observed that the M.Sc. Neuroscience course being conducted in NBRC covers 200 credits as detailed below :

(1 credit = 12hrs of Theory Classes = 24 hrs of Practical classes)

Ist Year

A. Theory 5 hours Lectures per week

3 hours Tutorials per week
1.5 hours Common Seminars per week
Total 9.5 hours per week

We have 11 courses of which 5 courses are taught for 1.5 months each and 6 courses are taught for 1 month each. The courses are as mentioned below :

1. Cellular Biology and Biochemistry - 6 weeks
2. Genetics and Molecular Biology - 6 weeks
3. Neuro Anatomy - 6 weeks
4. Systems Neuroscience - 6 weeks
5. Computational Neuroscience
& Fundamentals of Computation - 6 weeks
6. Neurochemistry - 4 weeks
7. Molecular & Cellular Neuroscience - 4 weeks
8. Membrane Biophysics - 4 weeks
9. Developmental Biology - 4 weeks
10. Biostatistics - 4 weeks
11. Cognitive Neuroscience - 4 weeks

54 weeks x 9.5 hours = 513 hours in a year = 43 credits per year

B. Practicals

4 hours a day x 180 days = 720 hours in 1 year = 30 credits per year

C. Seminar(course) = 2 hrs per week x 38 weeks = 76 hours

Introductory subject = 8 hours

Sub Total = 84 hours in a year = 7 credits per year

Grand Total(Ist Year) = 43 + 30 + 7 = 80 credits

IInd Year

Dissertation = 120 credits

Grand Total = 80 + 120 = 200 credits

Item 3 (5)(i) : Any other item to be taken up with permission of the chair

DBT-JRF Selection at NBRC

NBRC has been allocated 5 DBT-JRF Fellowships for the year 2005-06. The result of DBT-JRF's was not declared when NBRC conducted the interviews for Ph.D admissions for the current year. Hence the selection of DBT-JRF's will be done as per the criteria followed by NBRC for selecting Ph.D candidates, which is as mentioned below:

1. 10th Class – 70% and above
2. 12th Class – 70% and above
3. Qualifying exam – 60% and above

The Board has noted and approved the selection of 5 Ph.D candidates under DBT-JRF at NBRC, as per the criteria adopted for the Ph.D.candidates and according to performance in the interview

Item (3)5 (ii): (a) The Board of studies suggested that the evaluation of M.Sc. thesis may be done by participation of external Examiner.

(b) It is also suggested that the setting of final exam paper may be moderated by internal examiner.

Item (3)5 (iii): The Board of Studies committee has also discussed the below mentioned issues and suggested that :

(a) External examiner for M.Sc should be sent the Dissertation prior to the VIVA.

(b) M.Sc Dissertation should be submitted by June /- and the results should be declared by July.

As there was no other point, the meeting ended with vote of thanks to the chair.

Minutes of the Fourth Board of Studies Committee Meeting of NBRC held on 19th April, 2006 in the Conference Room of NBRC, Manesar

The 4th Meeting of the Board of Studies Committee of NBRC was held at NBRC on 19th April, 2006. The following members attended the meeting:-

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| 1. | Prof. V.Ravindranath
Director, NBRC | Chairperson |
| 2. | Prof. Shashi Wadhwa
AIIMS, New Delhi | Member |
| 3. | Prof. K. Muralidhar
University of Delhi | Member |
| 4. | Prof.Shobini L.Rao
Scientist VII, NBRC | Member |
| 5. | Dr. Neeraj Jain
Scientist V, NBRC | Member |
| 6. | Dr. V. Rema
Scientist V, NBRC | Member |
| 7. | Dr. P.K. Roy
Scientist V, NBRC | Member |
| 8. | Dr. Pankaj Seth
Scientist IV, NBRC | Member |
| 9. | Dr. Narender Kumar Dhingra
Scientist IV, NBRC | Member |
| 10. | Dr. Shiv Kumar Sharma
Scientist IV, NBRC | Member |
| 11. | Dr. Aditya Murthy
Scientist III, NBRC | Member |
| 12. | Dr. Nihar R. Jana
Scientist III, NBRC | Member |
| 13. | Dr. P.K. Swain
Scientist III, NBRC | Member |
| 14. | Dr. Soumya Iyengar
Scientist III, NBRC | Member |
| 15. | Dr. Nandini C. Singh
Scientist III, NBRC | Member |
| 16. | Dr. Shyamala Mani
Scientist III, NBRC | Member |
| 17. | Dr. Anirban Basu
Scientist III, NBRC | Member |
| 18. | Dr.Ellora Sen
Scientist III, NBRC | Member |
| 19. | Mr. K.V. S. Kameswara Rao
Registrar, NBRC | Member |

Item 4 (1) : Welcome by Chairperson

Prof. Vijayalakshmi Ravindranath, Chairperson, Board of Studies welcomed all the members to the 4th meeting of the Board of Studies of NBRC.

Item 4 (2) : Confirmation of the Minutes of the Third Meeting of the Board of Studies.

The Minutes of the 3rd Meeting of the Board of Studies were confirmed, as there were no comments from members, to whom the minutes were circulated.

Item 4 (3) : Action Taken Report on the recommendations made in the third Meeting of Board of Studies

Members of Board of Studies noted the Action Taken on the recommendations made in the third meeting of Board of Studies.

Item 4 (4) : Intimation to the Board of Studies regarding action taken in the fourth Meeting of Academic Council held on 23rd December, 2005 and approval of Academic Council regarding the recommendations made by BOS in its third meeting held on 27th July, 2005.

Members of Board of Studies noted the Action Taken in the fourth meeting of Academic Council held on 23rd December, 2005. Also the members noted the approval given by Academic council on the recommendations made by BOS in its third meeting held on 27th July, 2005.

Item 4(5) : Approval for Reservation Policy to be implemented for Int.Ph.D / Ph.D 2006 Admissions in NBRC

The Committee Members discussed regarding the reservation policy to be implemented for Int.Ph.D / Ph.D 2006 Admissions in NBRC and approved the reservation policy to be implemented as per the guidelines of UGC and Government of India issued from time to time. The approved Reservation Policy to be adopted at NBRC is as mentioned below:

(i) SC – 15%

(ii) ST – 7.5%

If the required number of seats are not filled due to non-availability of SC/ST candidates they will be left vacant.

(iii) Physically Handicapped – 3%

If eligible candidates are not available in this category, the seats will be converted to general category

Item 4 (6) : Approval of Doctoral Committees for Registered students (Annexure “A”)

The members discussed on the proposed list of Doctoral committees for Ph.D. registered candidates and approved the same .

Item 4 (7) : Approval of panel of examiners for evaluation of Ph.D Thesis of the following candidates: (Annexure “B”)

i) Mr.Reddy Peera Kommaddi

ii) Ms.Rashmi Mishra

iii) Mr.Supriya Ray

The members discussed on the list of proposed panel of examiners for evaluation of Ph.D Thesis for the above mentioned candidates and approved the same

Item 4 (8): Any other point to be taken up with the permission of the chair

The Board of Studies committee has also discussed the below mentioned issues:

(i) The committee members noted a minor change in the Syllabus for the subject Biochemistry, and ratified the inclusion of the topic Bioenergetics in the syllabus.

(ii) Stipend for Int.Ph.D Programme-

The members suggested the stipend for the students joining the Int.Ph.D Programme in NBRC from 2006 onwards as mentioned below:

- a. For the first two years – Rs.3,000/- per month
- b. From 3rd year onwards – Rs.8000/- per month or enhanced stipend as per rules.

(iii) The Board of studies committee authorized Chairman, Board of Studies, to finalise the panel of External Examiners for evaluation of M.Sc Thesis submitted by M.Sc(Final) students of NBRC.

As there was no other point, the meeting ended with vote of thanks to the Chair.

DOCTORAL COMMITTEES FOR PHD-2004 STUDENTS

Mr.Alok Gupta Prof.V.Ravindranath(Supervisor) Dr.Soumya Iyengar(Co-Supervisor) Dr.Shiv Kumar Sharma(Member) Dr.Anirban Basu(Member)	Ms.Nazia Khurshid Dr.Soumya Iyengar(Supervisor) Prof.V.Ravindranath(Co-supervisor) Dr.Neeraj Jain(Member) Dr.Shyamala Mani(Member)
Ms.Shalaka Mulherkar Dr.Nihar Ranjan Jana(Supervisor) Dr.Anirban Basu(Co-supervisor) Dr.P.K.Swain(Member) Prof.V.Ravindranath(Member)	Mr.Manoj Kumar Mishra Dr.Anirban Basu(Supervisor) Dr.Nihar Ranjan Jana(Co-supervisor) Dr.V.Rema (Member) Dr.Soumya Iyengar (Member)
Mr.Anshul Shrivastava Dr.Rema Velayudhan(Supervisor) Dr.Aditya Murthy(Co-supervisor) Dr.Shiv Kumar Sharma(Member) Dr.Narender K.Dhingra(member)	Mr.Leslee Lazar Dr.Neeraj Jain(Supervisor) Dr.Aditya Murthy(Co-supervisor) Dr.Nandini C.Singh(Member) Dr.Soumya Iyengar(Member)
Mr.R.Arjun Dr.Aditya Murthy(Supervisor) Dr.Shobhini L.Rao (Co-supervisor) Dr.Neeraj Jain(Member) Dr.Nandini C.Singh(Member)	Mr.Patel Dharmesh Kumar Dr.Prabodha Swain(Supervisor) Dr.N.R.Jana(CO-supervisor) Dr.Pankaj Seth(Member) Dr.Narender K.Dhingra(Member)
Ms.Mamata Mishra Dr.Pankaj Seth(Supervisor) Dr.Prabodha K.Swain(Co-supervisor) Dr.Anirban Basu(Member) Dr.Shyamala Mani(Member)	Ms.Chinmoyee Moharana Dr.Shiv Kumar Sharma(Supervisor) Dr.V.Rema(Co-supervisor) Dr.Anirban Basu (Member) Dr.Pankaj Seth (Member)

Mr.Niranjan A.Kambi Dr.Neeraj Jain(Supervisor) Dr.Aditya Murty(Co-Supervisor) Dr.P.K.Roy(Member) Dr.Shyamala Mani(Member)	Mr.Budhachandra Singh Dr.P.K.Roy(Supervisor) Dr.Aditya Murthy(Co-supervisor) Dr.Nandini C.Singh (Member) Dr.V.Reman(Member)
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Annexure "B"

LIST OF EXAMINERS FOR EVALUATION OF PH.D THESIS OF MS.RASHMI MISHRA

(1)	:	Dr.Shubha Tole Department of Biological Sciences School of Natural Sciences Tata Institute of Fundamental Research(TIFR) Homi Bhabha Road, Colaba Mumbai - 400 005 E-mail:stole@tifr.res.in Tel: 022-2280 4545 Ext-2678 Fax : 91-22-22804610
(2)	:	Dr.Vidita Vaidya Department of Biological Sciences School of Natural Sciences Tata Institute of Fundamental Research(TIFR) Homi Bhabha Road, Colaba Mumbai - 400 005 E-mail : vvaidya@tifr.res.in Tel : 91 – 22 - 22782608 Fax : 91-22 -22804610
(3)	:	Dr.Veronica Rodrigues Department of Biological Sciences Tata Institute of Fundamental Research Homi Bhabha Road, Colaba Mumbai – 400 005 Tel.No : 022 – (2)- 215 2971 ext - 2529 E-mail : veronica@tifr.res.in
(4)	:	Dr.Pierre Gressens INSERM U 676 & Service de Neuropediatrie Hopital Robert Debre 48 Blvd Serurier F-75019 Paris, France E-mail : gressens@rdebre.inserm.fr

(5)	:	Dr.James E.Schwob George A.Bates Professor of Histology and Chair Department of Anatomy and Cellular Biology Tufts University School of Medicine 136 Harrison Avenue Boston, Massachusetts 02111 E-mail : Jim.schwob@tufts.edu
(6)	:	Dr.Shashi Wadhwa Professor Department of Anatomy All India Institute of Medical Sciences(AIIMS) Ansari Nagar New Delhi – 110 029 Tel.No : 91 – 2 – 659 4875, 26565995 Fax No: 26862663 E-mail : shashiwadhwa@hotmail.com
(7)	:	Dr.K.Vijayaraghavan Director National Centre for Biological Sciences UAS-GKVK Campus GKVK P.O Bangalore – 560 065 Phone – 080-23636421 & 29 ext-3000 E-mail : vijay@ncbs.res.in
(8)	:	Dr.M.M.Panicker Scientist Department of Neurobiology National Centre for Biological Sciences(NCBS) UAS-GKVK Campus GKVK P.O Bangalore – 560 065 Tel: 080-23636421 & 29 Extn.2250 E-mail: panic@ncbs.res.in

**LIST OF PANEL OF EXAMINERS FOR EVALUATION OF PH.D THESIS OF
MR.SUPRIYA RAY**

(1)	:	Dr.Bappi Raju Dept. of Computer and Information Sciences AI LAB Building University of Hyderabad Gachibowli Hyderabad – 500 046 E-mail:bapics@uohyd.ernet.in Tel: 040 – 23130414
(2)	:	Dr.Upinder Bhalla Neurobiology Division National Centre for Biological Sciences GKVK Campus, Bellary Road Bangalore – 560 065 E-mail: bhalla@ncbs.res.in Tel: 080-23636421, 23636423
(3)	:	Dr.Sumantra Chatterji Neurobiology Division National Centre for Biological Sciences GKVK Campus, Bellary Road Bangalore – 560 065 E-mail: bhalla@ncbs.res.in Tel: 080-23636421, 23636423
(4)	:	Prof.Rohit Manchanda Professor Biomedical Engineering Group School of Biosciences & Bioengineering Indian Institute of Technology, Bombay Powai MUMBAI – 400 076 Phone – (022) 2576 7765 E-mail : rmanch@iitb.res.in
(5)	:	Dr.Basabi Bhaumik Professor Department of Electrical Engineering Indian Institute of Technology Hauz Khas New Delhi – 110 016 E-mail: bhaumik@ee.iitd.ernet.in Tel.No : 91 – (2) – 658 1264
(6)	:	Dr.Narayana Srinivasan Senior Faculty Centre for Behavioural and Cognitive Sciences Psychology Building University of Allahabad Allahabad - 211002 Email: ammuns@yahoo.com Tele/Fax: 0532-2460738

7	:	Kirk Thompson Laboratory of Sensorimotor Research National Eye Institute(NEI) / NIH Bldg.49, Rm.2A50 Bethesda, MD 20892 E-mail: kgt@lsr.nei.nih.gov
8	:	Eileen Kowler Professor Rutgers University 152 Frelinghuysen Road Piscataway, NJ 08854 Tel : 732-445-2086 Fax : 732-445-2263 E-mail: kowler@rci.rutgers.edu

LIST OF EXAMINERS FOR EVALUATION OF THE PH.D
THESIS
SUBMITTED BY MR. K. REDDY PEERA

(1)	:	Dr. P.K. Seth, Director (Retd.) Industrial Toxicology Research Centre, Mahatma Gandhi Marg, Post Box No:80, <u>LUCKNOW – 226 001.</u> Tel. No: 0522 – (2) - 228 227 Email : itrc@sancharnet.in ; director@itrc.india.org
(2)	:	Prof. G. Padmanaban, Department of Biochemistry, Indian Institute of Sciences, BANGALORE – 560 012. Tel. No: 080 – (2) – 360 1492 Email : geepee@biochem.iisc.ernet.in
(3)	:	Prof. K.K. Kohli, Professor of Biochemistry, Post Graduate Institute of Medical Education & Research, Sector – 12, CHANDIGARH – 160 012. Tel. No: 0172 – 274 7585 Email : pgimer@chd.nic.in
(4)	:	Dr. B.N. Dhawan, Director (Retd.) Central Drug Research Institute, (CDRI), No:3, Rama Krishna Marg, Faizabad Road, <u>LUCKNOW – 226 007.</u> Tel. No: 0522 – (2) - 371 166 Email : bndhawan@hotmail.com
(5)	:	Dr. Benedict Volk Dept. of Neuropathology University of Freiburg I.Br. Alberst. 19 79104, Freiberg I.Br. Germany Tel No: 07612705050 Fax No: 07612705106

(6)	:	Dr. Guengerich F.P. Department of Biochemistry & Center in Molecular Toxicology, Vanderbilt University School of Medicine, Nashville, TN 37232 – 0146 United States of America, Email : guengerich@toxicology.mc.vanderbilt.edu
(7)	:	Dr. Pierre Baumann, Unit of Biochemistry & Clinical Psychopharmacology, University, Department of Adult Psychiatry, Cery Hospital, Prilly – Lausanne, Switzerland. Email : Pierre.baumann@inst.hospvd.ch
(8)	:	Dr. Neal Castagnoli Jr. Department of Chemistry, Virginia Polytechnic Institute of State University, 107 Davidson Hall, Blacksburg, VA – 24061 – 0212, United States of America, Email : ncastagn@vt.edu

Minutes of the Fifth Board of Studies Committee Meeting of NBRC held on 8th September, 2006 in the Conference Room of NBRC, Manesar.

The 5th Meeting of the Board of Studies Committee of NBRC was held at NBRC on 8th September, 2006. The following members attended the meeting:-

- | | | |
|-----|--|-------------|
| 1. | Prof. V.Ravindranath
Director, NBRC | Chairperson |
| 2. | Prof. Shashi Wadhwa
AIIMS, New Delhi | Member |
| 3. | Prof. K. Muralidhar
University of Delhi | Member |
| 4. | Prof.Shobini L.Rao
Scientist VII, NBRC | Member |
| 5. | Dr. V. Rema
Scientist V, NBRC | Member |
| 6. | Dr. P.K. Roy
Scientist V, NBRC | Member |
| 7. | Dr. Pankaj Seth
Scientist IV, NBRC | Member |
| 8. | Dr. Narender Kumar Dhingra
Scientist IV, NBRC | Member |
| 9. | Dr. Shiv Kumar Sharma
Scientist IV, NBRC | Member |
| 10. | Dr. Aditya Murthy
Scientist III, NBRC | Member |
| 11. | Dr. Nihar R. Jana
Scientist III, NBRC | Member |
| 12. | Dr. P.K. Swain
Scientist III, NBRC | Member |
| 13. | Dr. Soumya Iyengar
Scientist III, NBRC | Member |
| 14. | Dr. Nandini C. Singh
Scientist III, NBRC | Member |
| 15. | Dr. Shyamala Mani
Scientist III, NBRC | Member |
| 16. | Dr. Anirban Basu
Scientist III, NBRC | Member |
| 17. | Dr.Ellora Sen
Scientist III, NBRC | Member |
| 18. | Mr. K.V. S. Kameswara Rao
Registrar, NBRC | Member |

Item 5 (1) : Welcome by Chairperson

Prof. Vijayalakshmi Ravindranath, Chairperson, Board of Studies welcomed all the members to the 5th meeting of the Board of Studies of NBRC. ✓

Item 5 (2) : Confirmation of the Minutes of the fourth Meeting of the Board of Studies

The Minutes of the 4th Meeting of the Board of Studies were confirmed, as there were no comments from members, to whom the minutes were circulated.

Item 5 (3) : Action Taken Report on the recommendations made in the third Meeting of Board of Studies(Annexure "A")

Members of Board of Studies noted the Action Taken on the recommendations made in the fourth meeting of Board of Studies.

Item 5 (4) : Intimation to the Board of Studies regarding action taken in the fourth Meeting of Academic Council held on 23rd December, 2005 and regarding the action taken as recommended by BOS in its third meeting held on 27th July, 2005(Annexure "B").

Members of Board of Studies noted the Action Taken in the fourth meeting of Academic Council held on 23rd December, 2005. Also the members noted the action taken on the recommendations made by BOS in its third meeting held on 27th July, 2005.

Item 5(5) : Approval of Doctoral Committees for Registered Ph.D-2005 students and 3 students of Ph.D-2006(Annexure "C").

- 1) Approval of Doctoral Committee for Dr.Raka Maitra (Ph.D-2004 student)
- 2) Ratification of Doctoral Committee for Ms.Nazia

Khurshid(inclusion of Dr.Ellora Sen as a doctoral committee member in addition to the members present)

✓

The members discussed on the proposed list of Doctoral committees for Ph.D-2004,2005,2006 registered candidates and approved the same . The members also ratified the Doctoral Committee for Ms.Nazia Khurshid(Ph.D-2004 student).

Item 5(6) : Approval for modified M.Sc Regulations(Annexure “D”)

The members discussed on the modified M.Sc Regulations and approved the same .

Item 5(7): Approval for Integrated Ph.D Regulations(Annexure “E”)

The members discussed on the draft Integrated Ph.D Regulations and approved the same.

Item 5(8) : Approval of panel of examiners for evaluation of Ph.D Thesis for Ph.D-2002 students

- i) Ms.Priyanka Dikshit
- ii) Ms.Latika Singh
- iii) Mr.Anand Goswami
- iv) Mr.Sandeep Kumar
- v) Mr.Manoj Kumar

The members discussed on the list of proposed panel of examiners for evaluation of Ph.D Thesis for the above mentioned candidates. It was suggested that the details of the panel of examiners may be furnished on a format so that the BOS can peruse the background of the person recommended to be in the list of examiners. Total eight names are to be proposed out of which 4 names can be from India and the remaining 4 from abroad. Hence the item is deferred and all proposals are to be re submitted in the given

format(Form "A") to the BOS in its next meeting for approval. The guidelines for recommending a name are as follows:



1. The proposed examiner should have been a guide himself.
2. He should have atleast 8 years of Post Doctoral experience.
3. He should have been a senior author and have documented proof of expertise in the area of thesis.
4. The proposed examiner should not be a member of BOS or Academic Council of NBRC.
5. The collaborators of the supervisors are not to be suggested as examiners.
6. While giving the list there should be 4 Indian examiners and 4 foreign examiners.

While discussing the evaluation of thesis by the examiners, members unanimously suggested, that the proforma, asking the final opinion of the examiner as regards to accepting / rejecting the Ph.D thesis is concerned, should have the following options out of which, one may be ticked by the examiner concerned.

1. The Thesis is accepted
2. The Thesis is accepted subject to answering the queries raised herein which are to be replied satisfactorily in the viva.

Queries :

- (i)
- (ii)
- (iii)

3. The Thesis is rejected.

The model proforma is enclosed as "Form B"

Item 5 (9): Ratification for Honorarium for M.Sc and Ph.D Thesis

(Annexure “F”)

The members ratified the honorarium to be given for the External Examiners who are evaluating the M.Sc and Ph.D Thesis in NBRC.



Item 5 (10): Ratification for inclusion of internal members for conducting Comprehensive viva-voce examination (Annexure “G”).

The members ratified the inclusion of additional internal members(faculty) of NBRC for conducting the comprehensive viva-voce examination for Ph.D students at the end of their course work.

Item 5(11): Ratification of M.Sc Thesis committees for evaluating the thesis for M.Sc-2004 students(Annexure “H”).

The members discussed on the M.Sc Thesis Committees formed for evaluating the thesis for M.Sc-2004 students and ratified the same.

Item 5(12) Ratification for non-grading system for declaring Result of M.Sc And Ph.D as recommended by the Academic Committee vide its Meting held on 5th July, 2006 in NBRC.

The members discussed on the non-grading system for declaring result of M.Sc and Ph.D as recommended by the Academic Committee of NBRC and approved the same.

It was suggested that though the class is not declared, the indication as to range of percentage may be included in the markslist as recommended by BOS its meeting 2nd meeting(so that class can be deduced).

Item 5(13) Admissions for foreign students for Int.Ph.D and Ph.D courses in NBRC

- i) Mr.Ahmed Tarek, a final year student at the faculty of pharmacy, Cairo University, Egypt has sent an e-mail for joining in NBRC as a postgraduate student to carry out Research.

The members discussed on the admissions for foreign students for Int.Ph.D and Ph.D courses in NBRC, and felt that since NBRC was very small and relatively isolated that this would cause additional social and cultural problems for foreign students seeking admission in NBRC. Instead it was suggested that NBRC may take foreign students for project work for short periods of around 3-6 months.

As there was no other point to be taken up the meeting ended with a vote of thanks to the chair.

Annexure "A"

S.No	Agenda item No.	Action Taken
(i)	Item No 4(5)	The Reservation Policy as approved in the 4 th Board of Studies meeting for Int.Ph.D / Ph.D-2006 Admissions in NBRC has been implemented in NBRC. 5 students has joined for the integrated Ph.D programme and 9 students have joined for Ph.D Programme out of which 3 students are M.Sc completed 2004 batch students of NBRC.

Annexure "B"

S.No	Agenda item No.	Action Taken
(i)	Item No 4(6)	Starting of Integrated M.Sc/Ph.D Programme in NBRC NBRC has started an integrated M.Sc/Ph.D Programme as approved in 4th Academic Council meeting. and also implemented the Reservation Policy as approved in the 4th Board of Studies meeting. 5 students has joined for the above mentioned programme
(ii)	Item No 3(5)	The evaluation of M.Sc. thesis has been done by the participation of External Examiner as suggested in the 3rd BOS meeting has been implemented in NBRC. Also the External examiner for M.Sc Thesis has been sent the Dissertation prior to the VIVA as suggested in the 3rd BOS meeting The result of M.Sc for 8 students has been declared in July as suggested in the 3rd meeting of BOS .



Doctoral Committees for Ph.D-2005 students

Ms.Neha Sehgal Prof.V.Ravindranath(Supervisor) Dr.Shiv Kumar Sharma(Co-supervisor) Dr.Anirban Basu(Member) Dr.Soumya Iyengar(Member)	Ms.D.Lalitha Prof.V.Ravindranath(Supervisor) Dr.Ellora Sen(Co-supervisor) Dr.Soumya Iyengar(Member) Dr.Pankaj Seth(Member)
Mr. Jai Prakash Sharma Dr.Nihar Ranjan Jana (supervisor) Dr.Anirban Basu (co-supervisor) Dr.Prabodha Swain (member) Dr.Ellora Sen (member)	Ms.Rachna Duseja Dr.Anirban Basu(Supervisor) Dr Shiv K Sharma(Co-supervisor) Dr Soumya Iyengar(Member) Dr Nihar R. Jana(Member)
Ms.Sulagna Das Dr.Anirban Basu(Supervisor) Dr.Soumya Iyengar(Co-supervisor) Dr.Shiv Kumar Sharma(Member) Dr Nihar R.Jana(Member)	Ms Radhika Rajan Dr.Neeraj Jain(Supervisor) Dr Aditya Murthy(Co-supervisor) Prof. Shobini Rao(Member) Dr Nandini Singh(Member)

Mohammad Hisham P.M Dr.Neeraj Jain(Supervisor) Dr. Soumya Iyengar(Co-supervisor) Dr.Prasun Roy(Member) Dr.Aditya Murthy(Member)	Ms.Shilpa Mishra Dr.Shiv Kumar Sharma(Supervisor) Dr.V.Rema(Co-supervisor) Dr.Narender K.Dhingra(Member) Dr.Ellora Sen(Member)
Mr.Vivek Sharma Dr.Ellora Sen(Supervisor) Dr.Shiv Kumar Sharma(Co-supervisor) Dr.N.R.Jana(Member) Dr.Narender K.Dhingra(Member)	Ms.Richa Tewari Dr.Ellora Sen(Supervisor) Dr.Pankaj Seth(Co-supervisor) Dr.N.R.Jana(Member) Dr.Shiv Kumar Sharma(Member)
Mr.Nitin Koul Dr. Pankaj Seth (Supervisor) Prof.Shobini L.Rao(Co- Supervisor) Dr. Anirban Basu(Member) Dr. Nihar Jana (Member) Dr. P. Satishchandra (External Member)	Ms.Rupali Srivastava Dr.Shyamala Mani(Supervisor) Prof.V.Ravindranath(Co-supervisor) Dr.P.K.Swain(Member) Dr.N.R.Jana(Member)
Mr.Parthiv Haldipur Dr.Shyamala Mani(Supervisor) Dr.P.K.Swain(Co-supervisor) Dr.N.R.Jana(Member) Dr.Ellora Sen(Member)	Ms.Tanusree Das Dr.Nandini C.Singh(Supervisor) Dr.Soumya Iyengar(Co-supervisor) Dr.Prasun Roy(Member) Dr.Aditya Murthy(Member)
Mr.Subhadip Paul Dr.Prasun Roy(Supervisor) Dr.Aditya Murthy(Co-supervisor) Dr.Nandini C.Singh(Member) Prof.Shobini L.Rao(Member)	

Doctoral Committees for Ph.D-2006 students

Mr.Rahul Chaudhary Dr. V.Rema(Supervisor) Dr.Anirban Basu(Co-supervisor) Dr.Shiv Kumar Sharma(Member) Dr.Shyamala Mani(Member)	Mr. Pranav Oberoi Dr Prabodha Swain(Supervisor) Dr Narender Dhingra(Co-supervisor) Dr Nihar Ranjan Jana(Member) Dr Pankaj Seth(Member)
Ms.K.M.Sharika Dr.Aditya Murthy(Supervisor) Dr.Neeraj Jain(Co-supervisor) Prof,Shobini L.Rao(Member) Dr.P.K.Roy(Member)	

Doctoral Committees for Dr.Raka Maitra and Ms.Nazia Khurshid

✓

Dr.Raka Maitra	Ms.Nazia Khurshid
Prof.Shobini L.Rao(Supervisor)	Dr.Soumya Iyengar(Supervisor)
Dr.Aditya Murthy(Co-supervisor)	Prof.V.Ravindranath(Co-supervisor)
Dr.B.N.Gangadhar(External Member)	Dr.Neeraj Jain(Member)
Dr.Rajesh Sagar (External Member)	Dr.Shyamala Mani(Member)
	Dr.Ellora Sen(Member)

Annexure "D"

M.Sc. PROGRAMME

DESIGNATION OF THE DEGREE

The M.Sc. Neuroscience degree awarded shall be designated as Master of Science in Neuroscience of the National Brain Research Centre.

ADVERTISEMENT/NOTIFICATION

The M.Sc. course will commence in August every year. All vacant seats are advertised in national dailies and on the NBRC website (<http://www.nbrc.ac.in>).

ELIGIBILITY FOR APPLICATION FOR THE M.Sc. COURSE

A candidate seeking admission to the course of study leading to the award of Master of Science must possess at least one of the following qualifications from a university recognized by the competent authority governing in the respective areas with consistently excellent academic record.

1. A degree of Bachelor of Science or Bachelors degree in any subject related to the general area of Neurosciences/Brain Research. Candidates from diverse backgrounds that include, but not limited to, various disciplines of Biological, Physical Chemical Sciences, Mathematical and Computer Sciences, and Psychology will be considered
2. A degree of Bachelor of Medicine and Bachelor of Surgery (MBBS) or equivalent
3. A degree of BE/BTech or equivalent.

REQUIREMENTS FOR ADMISSION OF FOREIGN NATIONALS

Foreign nationals seeking admission to NBRC must fulfill all the eligibility requirements for M.Sc. described above. In addition, they must satisfy all the conditions required by the University Grants Commission and Govt. of India.

METHOD OF SELECTION

Selection will be based on 2 tier interview, which may be preceded by an entrance test.

COURSEWORK

The Masters programme will consist of coursework and Practicals.

Every research student shall undertake coursework and will have to satisfactorily complete courses. In addition, students will also be required to undergo Practicals.

- a) M.Sc. should be ordinarily completed within two years of joining NBRC. Extensions may be considered by the Chairman, Board of Studies, on the merits of the case.
- b) Course work will consist of a set of courses prescribed by the Board of Studies and will be compulsory for every student.
- c) Course work will be divided into 2 semesters.

- d) Final examinations at the end of each semester will be set by an external examiner from a panel approved by the Director. In addition there will be an internal board of examiners consisting of the concerned course instructor and 2 other faculty members from NBRC also approved by the Director, for moderating the paper.
- e) For successful completion of the M.Sc. programme, a candidate should obtain at least 50% of the aggregate marks in every course.
- f) If a candidate fails to obtain at least 50% marks in a course, he/she may be allowed to appear for a supplementary exam that will be held within one month of the declaration of the final semester results. If he/she fails in this exam he will be disqualified from the programme.
- g) If for some genuine reason(s) a student is unable to complete a course, he/she has to take the course when it is offered next within the following academic year, with the concurrence of the Board of Studies. Subsequent failure or absenteeism will result in the candidate being disqualified.
- h) Scholarships given to M.Sc. students will be limited to a 2 year period. Extensions may be considered by the Chairman, Board of Studies, on the merits of the case. Scholarships will be discontinued if the student fails in three or more courses.

PRACTICALS

M.Sc will undergo practicals as per the syllabus. The M.Sc students will undergo practicals in Systems / Cognitive / Computational Labs in one semester. In one semester, half the time will be devoted to Systems Labs and the other half to Cognitive and Computational Labs depending on the space. In the other Semester the students will undergo practicals in one of the Molecular and cellular Neuroscience Lab. The students should submit a concise project report after each Practical course in the respective Lab in each semester.

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APPOINTMENT OF RESEARCH SUPERVISOR

After successful completion of the first year, each student will be assigned to a Research Supervisor, based on whose advise, the topic of research is to be selected by the student. The assignment of the Research Supervisor will be done by the Board of Studies based on the candidates' research interests and the availability of space and requirements in the supervisor's laboratory. Decision of the Chairman, Board of Studies will be final.

DURATION OF THE M.Sc. PROGRAMME

The duration of course shall be two years. This may be extended, in exceptional cases by the Chairman, Board of Studies.

M.Sc. THESIS COMMITTEE

After completion of the first year of the M.Sc. course, the Research Supervisor will recommend to the Chairman, Board of Studies a Thesis committee for the candidate, which will consist of the Research Supervisor and another faculty from NBRC. The Committee will monitor the progress of the student, approve the research proposal and also recommend the submission of thesis. The evaluation of M.Sc thesis may be done by participation of external examiner. Change of Research Supervisor may be permitted provided it is recommended by the thesis committee of the concerned candidate and approved by the Chairman, Board of Studies. Such changes shall be allowed only in exceptional circumstances.

THESIS

- a) A thesis cannot be submitted without the express approval of the M.Sc. Thesis Committee.
- b) Each candidate for the award of the degree of Master of Science shall submit five copies of his/her thesis. The Research Supervisor shall certify that the work done by the candidate is original and carried out at NBRC under his/her supervision with the counter signature of the Director of NBRC.
- c) After the receipt of the satisfactory report on the thesis from the committee, the student will make a formal presentation of the thesis to the faculty and students of NBRC. This will be followed by a open viva-voce examination which will be conducted by the Board of Examiners consisting of the members of the thesis committee, a faculty member from NBRC and an external examiner from another university. External examiner for M.Sc should be sent the Dissertation prior to VIVA.
- d) The thesis will be evaluated by the committee. The overall evaluation will be graded as Satisfactory / Non-satisfactory.
- e) M.Sc Dissertation should be submitted by June and the results should be declared by July. In exceptional cases this may be extended by prior approval of the Chairman, Board of Studies.

ENTRANCE INTO Ph.D. PROGRAM

Entrance into Ph.D programme is based on performance in M.Sc programme and availability of seats in the Ph.D programme. All M.Sc. students are required to pass an interview before being selected into Ph.D. programme. Following admission, the Ph.D. course work will be waived for the students who have passed M.Sc. Neuroscience from NBRC.

Annexure "E"

INTEGRATED PH.D PROGRAMME

1. DESIGNATION OF THE DEGREE

The Integrated.Ph.D Neuroscience Programme shall lead to awarding two degrees on successful completion of the course

1. Master of Science in Neuroscience of the National Brain Research Centre.
2. Doctor of Philosophy of the National Brain Research Centre.

2. ELIGIBILITY FOR APPLICATION FOR THE INTEGRATED Ph.D. COURSE

A candidate seeking admission to the course of study leading to the award of Master of Science and Doctor of philosophy in Neuroscience must possess at least one of the following qualifications from a university recognized by the competent authority governing in the respective areas with consistently good academic record.

1. Candidates securing 55% throughout the academic career starting at 10th grade will be considered.
2. Bachelor's degree in any branch of Science such as Biology / Physics / Chemistry / Mathematics / Statistics / Computer Applications / Pharmacy / Veterinary Science / Psychology or equivalent.
3. Bachelor's degree holders in Engineering / Technology / Medicine or equivalent.
4. Candidates awaiting results of the final year examination are also eligible to apply. Candidates have to provide proof of having passed the qualifying examination at the time of interview.

3. REQUIREMENTS FOR ADMISSION OF FOREIGN NATIONALS

Foreign nationals seeking admission to NBRC must fulfill all the eligibility requirements for Int.Ph.D described above. In addition, they must satisfy all the conditions required by the University Grants Commission, Dept.of Biotechnology and Govt. of India.

4. METHOD OF SELECTION

Selection will be based on one or more interviews, which may be preceded by an entrance test.

5. COURSEWORK

During the 1st Year the Integrated.Ph.D programme shall include coursework, practicals and laboratory assignments as prescribed by competent authorities of NBRC from time to time. Every research student shall undertake and satisfactorily complete all the courses, practicals / laboratory assignments.

- a) Course work will consist of a set of courses prescribed by the Board of Studies and will be compulsory for every student who registers for Int.Ph.D.
- b) Course work will be divided into 2 semesters.

- c) Final examinations at the end of each semester will be set by an external examiner from a panel approved by the Director. In addition, there will be an internal board of examiners consisting of the concerned course instructor and 2 other faculty members from NBRC also approved by the Director, for moderating the question paper.
- d) For successful completion of the Int.Ph.D programme, a candidate should obtain at least 50% of the maximum marks in each course.
- e) If a candidate fails to obtain at least 50% marks in a course, he/she may be allowed to appear for a supplementary exam that may be held within one month of the declaration of the final semester results.
- f) If he/she fails again in the same course during the supplementary exam he /she will be disqualified from the programme.
- g) Candidates, who do not qualify in one or two courses, will be granted provisional registration till the time they appear and qualify in the next exam.
- h) If a candidate fails in more than two courses he/she will not be allowed to register for Int. Ph.D.
- i) Candidates may be permitted to register for courses over and above these prescribed courses on the specific recommendation of the Faculty-in-Charge
- j) Scholarships given to Int.Ph.D. students will be limited to 2 + 5 yrs from the date of joining. Extensions may be considered by the Chairman, Board of Studies, on the merits of the case.
- k) A Comprehensive viva-voce will be held at the end of the first year which the students must pass. The students who failed twice in the comprehensive viva-voce will be disqualified from the programme

6. PRACTICALS / ROTATION PROGRAMME

Integrated Ph.D students will undergo practicals as per the syllabus. In one Semester the integrated Ph.D students will undergo practicals in Systems / Cognitive / Computational Labs. In this semester, half the time will be devoted to Systems Labs and the other half to Cognitive and Computational Labs. In the 2nd Semester the students will undergo practicals in one of the Molecular and cellular Neuroscience Lab. The students should submit a concise project report after the Practical / Rotation in each lab. Practical will be followed by a viva-voce exam. Practical / Lab-Rotation is a part of the course work and getting passed in it, in both the semesters, is mandatory. Any candidate failing in this Practical / Lab-Rotation is required to repeat it as directed by the Supervisor concerned and pass it.

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7. ACADEMIC COMMITTEE

Director shall appoint an Academic Committee consisting of four members of the NBRC faculty. Two of the committee members may be changed every year. This committee will look after the academic activities and advise the Director whenever necessary. Registrar is the ex-officio member and will coordinate the meetings of the Academic Committee.

8. APPOINTMENT OF RESEARCH SUPERVISOR & CO-SUPERVISOR

On successful completion of the course work, each student will be required to give 3 choices of the research supervisors in the order of their preference. The final assignment of the Research Supervisor will be done by the Director based on the candidate's research interests and the availability of space and requirements in the intended supervisor's laboratory. Decision of the Director in this regard will be final.

In exceptional circumstances change of Research Supervisor may be permitted provided it is recommended by the Academic committee and approved by the Chairman, Board of Studies.

In case of protracted leave of absence of the Research Supervisor, the Co-Supervisor will take over the responsibilities of Research Supervisor.

9. DURATION OF THE INTEGRATED PH.D. PROGRAMME

The duration of programme will be the time period from registration for the Int.Ph.D. programme as provided below to the submission of the thesis. The minimum duration of the programme shall be two years, and the maximum duration shall be six years. In exceptional cases, these durations can be changed on the recommendation of the Academic Committee and by the Chairman, Board of Studies.

10. REGISTRATION

On successful completion of the course work and the assignment of a research supervisor, the candidate shall be eligible to register for Ph.D with NBRC(Deemed University), which will be approved by Board of Studies.

11 FORMATION OF DOCTORAL COMMITTEE

Within six months of the candidate's registration, the Research Supervisor of the candidate will recommend to the Chairman, Board of Studies, a panel of members for the Doctoral committee for the candidate. The Doctoral committee shall consist of the supervisor, co-supervisor and two more members of NBRC. In addition, one faculty member from another recognized teaching/research Institute may be invited to be a part of the committee. The Doctoral Committee will monitor the progress of the student, evaluate the research proposal and also advise regarding the submission of thesis.

12. SUBMISSION OF RESEARCH PROPOSAL

After the Doctoral committee has been approved by the Chairman, Board of Studies, the candidate shall prepare a detailed research plan stating his/her objectives and

methodology to be employed. The candidate shall present the proposal to the Doctoral Committee

The research proposal shall be submitted to the Doctoral committee within one year of registration and the committee will recommend the feasibility of the research plan recommending modifications as they seem fit. The Ph.D registration of those candidates who do not submit the research proposal within 2 years of registration shall be cancelled.

13. ASSESSMENT OF THE WORK PROGRESS OF THE CANDIDATES

- a) After the approval of the research proposal by the Doctoral Committee the candidate shall submit a yearly progress report to the Doctoral committee.
- b) Depending on the progress, the Doctoral committee may ask for more frequent progress reports.
- c) Research Supervisor will report to the Board of Studies whether the progress of a candidate's work is satisfactory / unsatisfactory.
- d) If two consecutive reports of the candidate's progress are unsatisfactory, the Chairman, Board of Studies may give him/her one more chance to improve his/her work during the next six months. At the end of this period, if the work of the candidate is still unsatisfactory, the candidate's registration will be cancelled.

14. THESIS AND EXAMINATIONS

- a) A thesis may be submitted with the express approval of the Doctoral committee.
- b) Each candidate shall submit five copies of his/her thesis. The Research Supervisor shall certify that the work done by the candidate is original and carried out under his/her supervision with the counter signature of the Director of NBRC.
- c) The Research Supervisor in consultation with the Doctoral Committee shall suggest a panel of examiners to the Chairman, Board of Studies, one year before the expected date of submission of the thesis. The suggested panel should include eight examiners from institutions other than NBRC.
- d) The Chairman, Board of Studies shall approve a board of three examiners for assessment of the thesis, from among the suggested panel. One of them shall be the Research Supervisor of the candidate, who shall act as the Chairman, Board of Examiners. In the absence of the Research Supervisor, the Co-Supervisor shall act as the Chairman, Board of Examiners. The other two will be external examiners from the panel of examiners as per 14(c) above. If the external examiners are not able to assess the thesis for any reason, alternative examiners may be nominated by chairman, Board of Studies and ratified by Board of Studies later on.
- e) The title of thesis and synopsis should be submitted to the Doctoral Committee three months prior to submission of the thesis to the Board of examiners.
- f) If one of the examiners rejects the thesis, it will be referred to another examiner from among the approved panel. In case the new examiner approves the thesis, it

will be considered approved. If the new examiner also rejects the thesis, the case will be referred to the arbitration committee(see below).

- g) If one or more examiner(s) recommend re-submission of the thesis after modifications it shall be done within a period to be decided by the Chairman, Board of Studies, on the recommendation of the Doctoral committee.
- h) If more than one examiners reject the thesis, the case will be referred to the arbitration committee(see below).
- i) The Ph.D Arbitration Committee shall consists of three members:
 - (i) a Faculty Member of NBRC(who is not a Member of the Doctoral Committee) duly nominated by Chairman, Board of studies. In case Chairman, Board of Studies happens to be the Supervisor of the student whose thesis has been rejected, Chairman, SAC, NBRC shall nominate the Faculty Member.
 - (ii) the respective Research Supervisor and
 - (iii) the Registrar, NBRC.This committee will discuss the case referred to it and give its recommendation to the Director.
- j) If a thesis is rejected by three or more examiners, it will stand rejected and shall not be referred to another examiner, or to the arbitration committee.
- k) If a report from any of the external examiners is not received within three months, a copy of the thesis may be sent to another examiner from amongst the approved panel.
- l) After the receipt of the satisfactory report on the thesis from all the examiners, the student will make a formal presentation of the thesis to the faculty and students of NBRC. This will be followed by a viva-voce examination which will be conducted by at least 2 members of the board of examiners out of which one will be the Research Supervisor and one external examiner.

* Under extraordinary circumstances where none of the external examiners can be present at the Viva-Voce examination, the Chairman of the Board of Studies may appoint another external substitute examiner from the panel recommended by the Doctoral Committee.

15. AWARD OF THE INTEGRATED PH.D. DEGREE

After the candidate successfully completes the Viva-Voce examination and unanimous recommendation from the attending members of Board of Examiners, NBRC shall award the degree of Master of Science in Neuroscience and Doctor of Philosophy (Ph.D.).

Annexure "F"

Honorarium for M.Sc Thesis and Ph.D Thesis evaluation:

1. An Honorarium of **Rs.1,500** per thesis was implemented in NBRC for the examiners for evaluating the thesis of M.Sc student as suggested by the Academic Committee
2. An Honorarium of **Rs.5,000** was implemented in NBRC for the examiners for evaluating the thesis of Ph.D student as suggested by the Academic Committee.

Annexure "G"

1. Panel of Examiners for conducting viva-voce for current first year Ph.D. students :

External	Internal
Dr. V. Mohan Kumar	Dr. Neeraj Jan
Dr. Sumantra Chaterji	Dr. Pankaj Seth
Dr. Vidita Vaidya	Dr. Prabodh Swain
Dr.T.S.Roy	Dr.Soumya Iyengar (In case of absentee)
Dr.Subha Tole	
Dr.Ishan Patro	
Prof.Rohit Manchanda	

In addition to the above mentioned internal members approved vide 1st BOS meeting held on 5th March, 2004 the following internal members has been included for conducting the comprehensive viva-voce examination.

S.No	Internal members
1	Dr.Narender K.Dhingra
2	Dr.Shiv Kumar Sharma
3	Dr.Nandini C.Singh
4	Dr.V.Reman
5	Dr.Anirban Basu

Annexure "H"

Mr.Ayan Ghoshal Dr.Anirban Basu(Supervisor) Dr.Soumya Iyengar(Co-supervisor/ Faculty Member of NBRC) Dr.Kakoli Ghoshal(External Examiner)	Mr.Sourojit Bhowmick Dr.Anirban Basu(Supervisor) Dr.N.R.Jana(Co-supervisor / Faculty Member of NBRC) Dr.Kakoli Ghoshal(External Examiner)
Mr.Dhrubajyoti Chowdhury Dr.N.R.Jana(Supervisor) Dr.Shiv Kumar Sharma(Co-supervisor/ Faculty Member of NBRC) Dr.Mitali Mukerji(External Examiner)	Ms.K.M.Sharika Dr.Aditya Murthy(Supervisor) Prof.Shobini Rao (Co-supervisor/ Faculty Member of NBRC) Prof R.Manchanda(External Examiner)
Mr.Vishal Kapoor Dr.Aditya Murthy(Supervisor) Prof.Shobini Rao (Co-supervisor/ Faculty Member of NBRC) Prof R.Manchanda(External Examiner)	Mr.Tanuj Gulati Dr.P.K.Roy(Supervisor) Dr.Aditya Murthy (Co-supervisor/ Faculty Member of NBRC) Dr.Basabi Bhaumick(External Examiner)
Mr.Pranav Oberoi Dr.P.K.Swain(Supervisor) Dr.N.R.Jana (Co-supervisor/ Faculty Member of NBRC) Dr.D.P.Sarkar(External Examiner)	Mr.Rahul Chaudhary Dr.V.Rema(Supervisor) Dr.Soumya Iyengar(Co-supervisor/ Faculty Member of NBRC) Prof.S.Wadhwa(External Examiner)
Ms.Geethika Phukan Dr.Soumya.Iyengar(Supervisor) Dr.Nandini C.Singh(Co-supervisor/ Faculty Member of NBRC) Prof.S.Wadhwa(External Examiner)	Ms.Bhavana Shrivastava Prof.V.Ravindranath(Supervisor) Dr.Shyamala Mani (Co-supervisor/ Faculty Member of NBRC) Dr.Rita Christopher(External Examiner)

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**Minutes of the Sixth Board of Studies Committee Meeting of NBRC held
on 10th April, 2007 in the Conference Room of NBRC, Manesar.**

The 6th Meeting of the Board of Studies Committee of NBRC was held at
NBRC on 10th April, 2007. The following members attended the meeting:-

1.	Prof. V.Ravindranath Director, NBRC	Chairperson
2.	Prof. Shashi Wadhwa AIIMS, New Delhi	Member
3.	Prof.Shobini L.Rao Scientist VII, NBRC	Member
4.	Dr.Neeraj Jain Scientist V, NBRC	Member
5.	Dr. V. Rema Scientist V, NBRC	Member
6.	Dr. P.K. Roy Scientist V, NBRC	Member
7.	Dr. Pankaj Seth Scientist IV, NBRC	Member
8.	Dr. Narender Kumar Dhingra Scientist IV, NBRC	Member
9.	Dr. Ellora Sen Scientist IV, NBRC	Member
10.	Dr. Aditya Murthy Scientist III, NBRC	Member
11.	Dr. Nihar R. Jana Scientist III, NBRC	Member
12.	Dr. P.K. Swain Scientist III, NBRC	Member
13.	Dr. Soumya Iyengar Scientist III, NBRC	Member
14.	Dr. Nandini C. Singh Scientist III, NBRC	Member
15.	Dr. Shyamala Mani Scientist III, NBRC	Member
16.	Dr. Anirban Basu Scientist III, NBRC	Member
17.	Mr. K.V. S. Kameswara Rao Registrar, NBRC	Member

Item 6 (1) : Welcome by Chairperson

Prof. Vijayalakshmi Ravindranath, Chairperson, Board of Studies welcomed all the members to the 6th meeting of the Board of Studies of NBRC.

The Chairperson informed that NBRC has conducted an entrance test on 4th February, 2007 at four centres across the country Delhi, Bangalore, Mumbai and Kolkatta for admission to Integrated Ph.D and Ph.D Programmes for the year 2007. She informed that M/S C.M.C Ltd., was assigned the job of handling the test starting from screening applications, sending call letters conducting the test at various centres and finally declaring the result. The candidates who are screened in the entrance test are called for interview for further screening.

She put on record the excellent effort made by Dr.Pankaj Seth and Mr.K.V.S.Kameswara Rao, Registrar in organising the test including generating and printing the question paper. She also expressed satisfaction with which CMC Ltd., has conducted the entire process of entrance test and thanked the faculty for their help and cooperation.

The Chairperson also informed about the Summer Training Programme-2007 that 10 candidates were selected among the 400 applications received for the NBRC Summer Training Programme, and 7 candidates were taken under IASC-INSANA-SASI Summer Training Programme

Item 6 (2) : Confirmation of the Minutes of the fifth Meeting of the Board of Studies

The Minutes of the 5th Meeting of the Board of Studies were confirmed, as there were no comments from members, to whom the minutes were circulated.

Item 6 (3) : Action Taken Report on the recommendations made in the fifth Meeting of Board of Studies

Members of Board of Studies noted the Action Taken on the recommendations made in the fifth meeting of Board of Studies.

Item 6 (4) : Approval of panel of examiners for evaluation of Ph.D Thesis for Ph.D-2002 students (Annexure "A")

6(4)(i) List of Panel of examiners for evaluation of Ph.D Thesis for Ph.D-2002 students.

(i) Ms.Priyanka Dikshit

- (ii) Mr.Anand Goswami
- (iii) Mr.Manoj Kumar
- (iv) Mr.Sandeep Kumar
- (v) Ms.Latika Singh
- (vi) Ms.Smitha Karunakaran

The members discussed on the proposed list of panel of examiners for evaluation of Ph.D Thesis for the above mentioned students of NBRC and approved the same.

- Item 6(5) :** Intimation to the Board of Studies regarding action taken as recommended in the fifth Meeting of Academic Council held on 5th March, 2007. (Annexure “B”)
- 6(5)(i) Modified M.Sc Regulations
 - 6(5)(ii) Modified Ph.D Regulations
 - 6(5)(iii) Modified Integrated Ph.D Regulations

Members of Board of Studies noted the modified regulations for M.Sc, Integrated Ph.D and Ph.D as approved by the fifth meeting of Academic Council held on 5th March, 2007. The BOS advised that the minimum attendance requirement of 75% in each course is to be strictly adhered to and those students who do not fulfil the minimum requirement of attendance should not be allowed to appear for the final exam in that subject in that year.

As there was no other point to be taken up the meeting ended with a vote of thanks to the chair.

Annexure “B”

REGULATIONS FOR M.Sc. PROGRAMME

DESIGNATION OF THE DEGREE

The M.Sc. Neuroscience degree awarded shall be designated as Master of Science in Neuroscience of the National Brain Research Centre.

ADVERTISEMENT/NOTIFICATION

The M.Sc. course will commence in August every year. All vacant seats are advertised in national dailies and on the NBRC website (<http://www.nbrc.ac.in>).

ELIGIBILITY FOR APPLICATION FOR THE M.Sc. COURSE

A candidate seeking admission to the course of study leading to the award of Master of Science must possess at least one of the following qualifications from a university recognized by the competent authority governing in the respective areas with consistently excellent academic record.

1. A degree of Bachelor of Science or Bachelors degree in any subject related to the general area of Neurosciences/Brain Research. Candidates from diverse backgrounds that include, but not limited to, various disciplines of Biological, Physical Chemical Sciences, Mathematical and Computer Sciences, and Psychology will be considered
2. A degree of Bachelor of Medicine and Bachelor of Surgery (MBBS) or equivalent
3. A degree of BE/BTech or equivalent.

REQUIREMENTS FOR ADMISSION OF FOREIGN NATIONALS

Foreign nationals seeking admission to NBRC must fulfill all the eligibility requirements for M.Sc. described above. In addition, they must satisfy all the conditions required by the University Grants Commission and Govt. of India.

METHOD OF SELECTION

Selection will be based on one or more interviews, which may be preceded by an entrance test.

COURSEWORK

The Masters programme will consist of coursework and Practicals. Every research student shall undertake coursework and will have to satisfactorily complete courses. In addition, students will also be required to undergo Practicals.

- a) M.Sc. should be ordinarily completed within two years of joining NBRC. Extensions may be considered by the Chairman, Board of Studies, on the merits of the case.

- b) Course work will consist of a set of courses prescribed by the Board of Studies and will be compulsory for every student.
- c) Students should have a minimum attendance requirement of 75% in every course. Students who do not fulfill the mandatory requirement, will not be permitted to appear for the examination(final) in that subject, unless they repeat the course during subsequent year by fulfilling minimum attendance.
- d) Course work will be divided into 2 semesters.
- e) Final examination paper at the end of each semester will be set by an examiner from a panel recommended by the Academic Committee and approved by the Chairman, Board of Studies. There will be a board of examiners consisting of the concerned course Instructor and 2 other faculty members of NBRC also recommended by Academic Committee and approved by the Chairman, Board of Studies for moderating the paper.
- f) For successful completion of the M.Sc. programme, a candidate should obtain at least 50% of the aggregate marks in every course.
- g) If a candidate fails to obtain at least 50% marks in a course, he/she may be allowed to appear for a supplementary exam. If he/she fails in the supplementary exam he / she will be disqualified from the programme.
- h) If for some genuine reason(s), a student has to drop course(s) during the training programme he/she has to take the course when it is offered next within the following academic year, as recommended by Academic Committee and approved by Chairman, Board of Studies.
- i) Scholarships given to M.Sc. students will be limited to a 2 year period. Extensions may be considered by the Chairman, Board of Studies, on the merits of the case. Scholarships will be discontinued if the student fails in three or more courses.

PRACTICALS

M.Sc students will undergo practicals as per the syllabus. In one Semester the M.Sc students will undergo practicals in one of the Systems Labs. In the other Semester the students will undergo practicals in one of the Molecular Labs. The students should submit a concise project report after the Practical in each lab. Practical will be followed by a viva-voce exam. Practical is a part of the course work and qualifying it, in both the semesters, is mandatory. Any candidate failing in this Practical is required to repeat it as directed by the Lab-Supervisor concerned and qualify it. The student need not rotate in the same lab.

APPOINTMENT OF RESEARCH SUPERVISOR

After successful completion of the first year, each student will be assigned to a Research Supervisor, based on whose advise, the topic of research is to be selected by the student. The assignment of the Research Supervisor will be done by the Board of

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Studies based on the candidates' research interests and the availability of space and requirements in the supervisor's laboratory. Decision of the Chairman, Board of Studies will be final.

DURATION OF THE M.Sc. PROGRAMME

The duration of course shall be two years. This may be extended, in exceptional cases by the Chairman, Board of Studies.

M.Sc. THESIS COMMITTEE

After completion of the first year of the M.Sc. course, the Research Supervisor will recommend to the Chairman, Board of Studies a Thesis committee for the candidate, which will consist of the Research Supervisor and another faculty from NBRC. The Committee will monitor the progress of the student and also recommend the submission of thesis. The evaluation of M.Sc thesis may be done by participation of external examiner. Change of Research Supervisor may be permitted provided it is recommended by the thesis committee of the concerned candidate and approved by the Chairman, Board of Studies. Such changes shall be allowed only in exceptional circumstances.

THESIS

- a) A thesis cannot be submitted without the express approval of the M.Sc. Thesis Committee.
- b) Each candidate for the award of the degree of Master of Science shall submit five copies of his/her thesis. The Research Supervisor shall certify that the work done by the candidate is original and carried out at NBRC under his/her supervision with the counter signature of the Director of NBRC.
- c) After the receipt of the satisfactory report on the thesis from the committee, the student will make a formal presentation of the thesis to the faculty and students of NBRC. This will be followed by an open viva-voce examination which will be conducted by the Board of Examiners consisting of the members of the thesis committee, a faculty member from NBRC and an external examiner from another university. External examiner for M.Sc should be sent the Dissertation prior to VIVA.
- d) The thesis will be evaluated by the committee. The overall evaluation will be graded as Satisfactory / Non-satisfactory.
- e) M.Sc Dissertation should be submitted by June and the results should be declared by July. In exceptional cases this may be extended by prior approval of the Chairman, Board of Studies.

ENTRANCE INTO Ph.D. PROGRAM

Entrance into Ph.D programme is based on performance in Entrance Test of NBRC and interview before being selected into Ph.D. programme. Following admission, the Ph.D. course work will be waived for the students who have passed M.Sc. Neuroscience from NBRC.

REGULATIONS FOR PH.D. PROGRAMME

DESIGNATION OF THE DEGREE

The Ph.D. degree awarded shall be designated as Doctor of Philosophy of the National Brain Research Centre. The certificate shall indicate the title of the thesis.

ADVERTISEMENT/NOTIFICATION

The Ph.D course will commence in August every year. All vacant seats are advertised in national dailies and on the NBRC website (<http://www.nbrc.ac.in>).

ELIGIBILITY FOR APPLICATION FOR THE PH.D. COURSE

A candidate seeking admission to the course of study leading to the award of Doctor of Philosophy must possess at least one of the following qualifications, from a university recognized by the University Grants Commission

1. Candidates securing 55% throughout the academic career starting at 10th grade will be considered
2. Master's degree in any branch of Science such as Biology / Physics / Chemistry / Mathematics / Statistics / Computer Applications / Pharmacy / Veterinary Science / Psychology or equivalent.
3. Bachelor's degree in Engineering / Technology / Medicine or equivalent.
4. Master's degree in Engineering / Technology / Medicine or equivalent.
5. Candidates appearing for the final year of qualifying examination are eligible to apply.

Candidates who have qualified for JRF in CSIR / UGC / ICMR / ICCSR / DBT-JRF national or any other equivalent examination are exempted from appearing for the entrance test. They should apply with the proof of qualification. They may be called for the interview subject to fulfilling the other requirements.

REQUIREMENTS FOR ADMISSION OF FOREIGN NATIONALS

Foreign nationals seeking admission to NBRC must fulfill all the eligibility requirements for Ph.D. described above. In addition, they must satisfy all the conditions required by the University Grants Commission, Department of Biotechnology and Govt. of India.

METHOD OF SELECTION

Selection will be based on one or more interviews, which may be preceded by an entrance test.

RESEARCH TRAINING PROGRAMME

Candidates selected for Ph.D. will be provisionally admitted to the Ph.D. Course and will be assigned a faculty-in-charge. The student shall work under the supervision of the faculty member in-charge till the time a Research Supervisor is assigned. The Research Training Programme (RTP) will consist of coursework and a laboratory rotation programme.

COURSEWORK

Every research student shall undertake coursework and will have to satisfactorily complete courses as advised by the faculty-in-charge.

- a) The Research Training Programme for Ph.D. should be ordinarily completed within one year of joining NBRC. A further period of six months may be allowed with prior approval of the Chairman, Board of Studies. Any further delay is to be considered by the Board of Studies, on the merits of the case.
- b) Students should have a minimum attendance requirement of 75% in every course. Students who do not fulfill the mandatory requirement, will not be permitted to appear for the examination(final) in that subject, unless they repeat the course during subsequent year by fulfilling minimum attendance.
- c) Coursework will consist of a set of courses, prescribed by the Board of Studies and will be compulsory for every student who registers for Ph.D.
- d) For successful completion of the training programme, a candidate should obtain at least 50% of the aggregate marks in every course.
- e) If a candidate fails to obtain at least 50% marks in a course, he/she may be allowed to appear for a supplementary exam. If he/she fails in this exam he will be disqualified from the programme
- f) If for some genuine reason(s), a student has to drop course(s) during the training programme he/she has to take the course when it is offered next within the following academic year, as recommended by Academic Committee and approved by Chairman, Board of Studies.
- g) Final examination paper at the end of each semester will be set by an examiner from a panel recommended by the Academic Committee and approved by the Chairman, Board of Studies. There will be a board of examiners consisting of the concerned course Instructor and 2 other faculty members of NBRC also recommended by Academic Committee and approved by the Chairman, Board of Studies for moderating the paper.
- h) Candidates may be permitted to register for courses over and above these prescribed courses on the specific recommendation of the Faculty-in-Charge.
- i) Candidates, who do not qualify in one or two courses, will be granted provisional registration till the time they appear and qualify in the next exam. If a candidate fails to obtain at least 50% marks in three or more courses he/she will not be allowed to register for Ph.D.
- j) If a candidate does not obtain 50% marks in all the courses in 2 attempts, he will not be allowed to register for Ph.D.
- k) A Comprehensive viva-voce will be held at the end of the course work which the students must pass. The students who failed twice in the comprehensive

viva-voce will be disqualified from the programme. A student who failed in any subject in the coursework is not eligible for attending the comprehensive viva-voce.

ROTATION PROGRAMME

Ph.D students will undergo Lab-Rotation as per the syllabus. In one Semester the Ph.D students will undergo Lab-Rotation in one of the Systems Labs. In the 2nd Semester the students will undergo Lab-Rotation in one of the Molecular Labs. The students should submit a concise project report after the Rotation in each lab. Lab-Rotation will be followed by a viva-voce exam. Lab-Rotation is a part of the course work and qualifying it, in both the semesters, is mandatory. Any candidate failing in this Practicals / Lab-Rotation is required to repeat it as directed by the Lab-Supervisor concerned and qualify it. The student need not rotate the same lab.

CANDIDACY

After successful completion of course work and the rotation programme of the Research Training Programme, the Faculty-in-charge will present a report to the Board of Studies, which will confirm the candidacy of the student for Ph.D.

ACADEMIC COMMITTEE

Director shall appoint an Academic Committee consisting of four members of the NBRC faculty. Two of the committee members may be changed every year. This committee will look after the academic activities and advise the Director whenever necessary. Registrar is the ex-officio member and will coordinate the meetings of the Academic Committee.

APPOINTMENT OF RESEARCH SUPERVISOR & CO-SUPERVISOR

On successful completion of the course work, each student will be required to give 3 choices of the research supervisors in the order of their preference. The final assignment of the Research Supervisor will be done by the Director based on the candidate's research interests and the availability of space and requirements in the intended supervisor's laboratory. Decision of the Chairman, Board of Studies in this regard will be final.

In exceptional circumstances change of Research Supervisor may be permitted provided it is recommended by the Academic committee and approved by the Chairman, Board of Studies.

In case of protracted leave of absence of the Research Supervisor, the Co-Supervisor will take over the responsibilities of Research Supervisor.

DURATION OF THE PH.D. PROGRAMME

The duration of course will be the time period from registration for the Ph.D. programme as provided below to the submission of the thesis. The minimum period of registration in respect of all the candidates who are registered for Ph.D. shall be

two years. In exceptional cases minimum registration period of two years can be modified by Chairman, Board of Studies. The maximum period of registration shall be five years, which may be extended, in exceptional cases by the Chairman, Board of Studies.

REGISTRATION

On successful completion of the Research Training Programme and the assignment of a research supervisor, the candidate shall be eligible to register for Ph.D with NBRC(Deemed University), which will be approved by Board of Studies.

FORMATION OF DOCTORAL COMMITTEE

Within six months of the candidates registration, the Research Supervisor of the candidate will recommend to the Chairman, Board of Studies, a panel of members for the Doctoral committee for the candidate. In addition to the Research Supervisor, the Doctoral committee shall include a co-supervisor and two other faculty members of NBRC. In addition, a maximum of one faculty member from other recognized teaching/research Institutions may be invited to be a part of the committee. The Doctoral Committee will monitor the progress of the student, approve the research proposal and also recommend the submission of thesis.

Change of Research Supervisor may be permitted provided it is recommended by the Doctoral committee of the candidate concerned and approved by the Chairman, Board of Studies. Such changes shall be allowed only in exceptional circumstances.

SUBMISSION OF RESEARCH PROPOSAL

After the Doctoral committee has been appointed by the Chairman, Board of Studies, the candidate shall prepare a detailed research plan stating his/her objectives and methodology to be employed.

The research proposal shall be submitted to the Doctoral committee within one year of registration and the committee together with the faculty of the Centre will recommend the feasibility of the research plan recommending modifications as they seem fit. The registration of Ph.D. of those candidates who do not submit the research proposal within 2 years of registration shall stand cancelled.

ASSESSMENT OF THE WORK OF THE CANDIDATES

- a) The progress of the candidate shall be periodically assessed by the Doctoral committee and a report submitted to the Institutional Ph.D Committee twice a year. The committee may decide to meet and report more frequently if there are any concerns about the candidates' progress.
- b) In case the Doctoral committee reports to the Board of Studies in two consecutive reports that the candidate's progress is unsatisfactory, the Chairman may then warn the candidate and give him/her one more chance to improve his/her work during the next six months. In case at the end of this period, the work of the candidate is still unsatisfactory, the candidate's registration will be cancelled.

THESIS AND EXAMINATIONS

- a) A thesis cannot be submitted without the express approval of the Research Supervisor/Co-Supervisor and the Doctoral committee.
- b) Each candidate for the award of the degree of Doctor of Philosophy shall submit five copies of his/her thesis. The Research Supervisor shall certify that the work done by the candidate is original and carried out at NBRC under his/her supervision with the counter signature of the Director of NBRC.
- c) The Research Supervisor in consultation with the Doctoral Committee shall suggest a panel of examiners to the Chairman, Board of Studies, one year before the expected date of submission of the thesis. The suggested panel should include eight examiners from institutions other than NBRC who, on the basis of their published work are leaders in the field of study undertaken by the candidate.
- d) The Chairman, Board of Studies shall appoint a board of three examiners for assessment of the thesis, from among the suggested panel. One of them shall be the Research Supervisor of the candidate, who shall act as the Chairman, Board of Examiners. In the absence of the Research Supervisor, the Co-Supervisor shall act as the Chairman, Board of Examiners. The other two will be external examiners from the panel of examiners as per (c) above.
- e) The title of thesis and synopsis should be submitted to the Doctoral Committee three months prior to submission of the thesis to the Board of examiners.
- f) If more than one examiner rejects the thesis, the case will be referred to the Arbitration Committee.
- g) The Ph.D Arbitration Committee shall consists of three members:
 - (i) a Faculty Member of NBRC(who is not a Member of the Doctoral Committee) duly nominated by Chairman, Board of studies. In case Chairman, Board of Studies happens to be the Supervisor of the student whose thesis has been rejected, Chairman, SAC, NBRC shall nominate the Faculty Member.
 - (ii) the respective Research Supervisor and
 - (iii) the Registrar, NBRC.This committee will discuss the case referred to it and give its recommendation to the Director.
- h) If a thesis is rejected by three or more examiners, it will stand rejected and shall not be referred to another examiner, or to the arbitration committee.
- i) If one or more examiner(s) recommend revision of thesis it may be revised with major or minor changes in the thesis. After modifications the resubmission shall be done within a period to be decided by the Chairman, Board of Studies, on the recommendation of the Doctoral committee.

- j) If a report from any of the external examiners is not received within three months, a copy of the thesis shall be sent to another examiner from amongst the approved panel.
- k) After the receipt of the satisfactory report on the thesis from all the examiners, the student will make a formal presentation of the thesis to the faculty and students of NBRC. This will be followed by a viva-voce examination which will be conducted by a board consisting of the Research Supervisor and *one of the external examiners.

* Under extraordinary circumstances where any of the external examiners cannot be present at the Viva-Voce examination, the Chairman of the Board of Studies may appoint another external substitute examiner from the panel recommended by the Doctoral Committee.

AWARD OF THE PH.D. DEGREE

After the candidate successfully completes the Viva-Voce examination and unanimous recommendation from the Board of Examiners, NBRC shall award the degree of Doctor of Philosophy (Ph.D.).

REGULATIONS FOR INTEGRATED PH.D PROGRAMME

1. DESIGNATION OF THE DEGREE

The Integrated.Ph.D Neuroscience Programme shall lead to awarding two degrees on successful completion of the course

1. Master of Science in Neuroscience of the National Brain Research Centre.
2. Doctor of Philosophy of the National Brain Research Centre.

2. ELIGIBILITY FOR APPLICATION FOR THE INTEGRATED Ph.D. COURSE

A candidate seeking admission to the course of study leading to the award of Master of Science and Doctor of philosophy in Neuroscience must possess at least one of the following qualifications from a university recognized by the competent authority governing in the respective areas with consistently good academic record.

1. Candidates securing 55% throughout the academic career starting at 10th grade will be considered.
2. Bachelor's degree in any branch of Science such as Biology / Physics / Chemistry / Mathematics / Statistics / Computer Applications / Pharmacy / Veterinary Science / Psychology or equivalent.
3. Bachelor's degree holders in Engineering / Technology / Medicine or equivalent.
4. Candidates awaiting results of the final year examination are also eligible to apply. Candidates have to provide proof of having passed the qualifying examination at the time of interview.

3. REQUIREMENTS FOR ADMISSION OF FOREIGN NATIONALS

Foreign nationals seeking admission to NBRC must fulfill all the eligibility requirements for Int.Ph.D described above. In addition, they must satisfy all the conditions required by the University Grants Commission, Dept.of Biotechnology and Govt. of India.

4. METHOD OF SELECTION

Selection will be based on one or more interviews, which may be preceded by an entrance test.

5. COURSEWORK

During the 1st Year the Integrated.Ph.D programme shall include coursework, practicals and laboratory assignments as prescribed by competent authorities of NBRC from time to time. Every research student shall undertake and satisfactorily complete all the courses, practicals / laboratory assignments.

- a) Course work will consist of a set of courses prescribed by the Board of Studies and will be compulsory for every student who registers for Int.Ph.D.
- b) Students should have a minimum attendance requirement of 75% in every course. Students who do not fulfill the mandatory requirement, will not be

permitted to appear for the examination(final) in that subject, unless they repeat the course during subsequent year by fulfilling minimum attendance.

- c) Course work will be divided into 2 semesters.
- d) Final examination paper at the end of each semester will be set by an examiner from a panel recommended by the Academic Committee and approved by the Chairman, Board of Studies. There will be a board of examiners consisting of the concerned course Instructor and 2 other faculty members of NBRC also recommended by Academic Committee and approved by the Chairman, Board of Studies for moderating the paper.
- e) For successful completion of the Int.Ph.D programme, a candidate should obtain at least 50% of the maximum marks in each course.
- f) If a candidate fails to obtain at least 50% marks in a course, he/she may be allowed to appear for a supplementary exam. If he/she fails in this exam he will be disqualified from the programme.
- g) If he/she fails again in the same course during the supplementary exam he /she will be disqualified from the programme.
- h) If for some genuine reason(s), a student has to drop course(s) during the training programme he/she has to take the course when it is offered next within the following academic year, as recommended by Academic Committee and approved by Chairman, Board of Studies.
- i) Candidates, who do not qualify in one or two courses, will be granted provisional registration till the time they appear and qualify in the next exam.
- j) If a candidate fails in more than two courses he/she will not be allowed to register for Int. Ph.D.
- k) Candidates may be permitted to register for courses over and above these prescribed courses on the specific recommendation of the Faculty-in-Charge
- l) Scholarships given to Int.Ph.D. students will be limited to 2 + 5 yrs from the date of joining. Extensions may be considered by the Chairman, Board of Studies, on the merits of the case.
- m) A Comprehensive viva-voce will be held at the end of the first year which the students must pass. The students who failed twice in the comprehensive viva-voce will be disqualified from the programme. A student who failed in any subject in the course work is not eligible for attending the comprehensive viva-voce.

6. PRACTICALS / ROTATION PROGRAMME

Integrated Ph.D students will undergo practicals as per the syllabus. In one Semester the integrated Ph.D students will undergo practicals in one of the Systems Labs. In the other Semester the students will undergo practicals in one of the Molecular Labs. The students should submit a concise project report after the Practical / Rotation in each lab. Practical will be followed by a viva-voce exam. Practical / Lab-Rotation is a part of the course work and qualifying it, in both the semesters, is mandatory. Any candidate failing in this Practical / Lab-Rotation is required to repeat it as directed by the Lab-Supervisor concerned and qualify it. The student need not rotate in the same lab.

7. ACADEMIC COMMITTEE

Director shall appoint an Academic Committee consisting of four members of the NBRC faculty. Two of the committee members may be changed every year. This committee will look after the academic activities and advise the Director whenever necessary. Registrar is the ex-officio member and will coordinate the meetings of the Academic Committee.

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8. APPOINTMENT OF RESEARCH SUPERVISOR & CO-SUPERVISOR

On successful completion of the course work, each student will be required to give 3 choices of the research supervisors in the order of their preference. The final assignment of the Research Supervisor will be done by the Director based on the candidate's research interests and the availability of space and requirements in the intended supervisor's laboratory. Decision of the Director in this regard will be final.

In exceptional circumstances change of Research Supervisor may be permitted provided it is recommended by the Academic committee and approved by the Chairman, Board of Studies.

In case of protracted leave of absence of the Research Supervisor, the Co-Supervisor will take over the responsibilities of Research Supervisor.

9. DURATION OF THE INTEGRATED PH.D. PROGRAMME

The duration of programme will be the time period from registration for the Int.Ph.D. programme as provided below to the submission of the thesis. The minimum duration of the programme shall be two years, and the maximum duration shall be six years. In exceptional cases, these durations can be changed on the recommendation of the Academic Committee and by the Chairman, Board of Studies.

10. REGISTRATION

On successful completion of the course work and the assignment of a research supervisor, the candidate shall be eligible to register for Ph.D with NBRC(Deemed University), which will be approved by Board of Studies.

11. FORMATION OF DOCTORAL COMMITTEE

Within six months of the candidate's registration, the Research Supervisor of the candidate will recommend to the Chairman, Board of Studies, a panel of members for the Doctoral committee for the candidate. The Doctoral committee shall consist of the supervisor, co-supervisor and two more members of NBRC. In addition, one faculty member from another recognized teaching/research Institute may be invited to be a part of the committee. The Doctoral Committee will monitor the progress of the student, evaluate the research proposal and also advise regarding the submission of thesis.

12. SUBMISSION OF RESEARCH PROPOSAL

After the Doctoral committee has been approved by the Chairman, Board of Studies, the candidate shall prepare a detailed research plan stating his/her objectives and methodology to be employed. The candidate shall present the proposal to the Doctoral Committee

The research proposal shall be submitted to the Doctoral committee within one year of registration and the committee will recommend the feasibility of the research plan recommending modifications as they seem fit. The Ph.D registration of those candidates who do not submit the research proposal within 2 years of registration shall be cancelled.

13. ASSESSMENT OF THE WORK PROGRESS OF THE CANDIDATES

- a) After the approval of the research proposal by the Doctoral Committee the candidate shall submit a yearly progress report to the Doctoral committee.
- b) Depending on the progress, the Doctoral committee may ask for more frequent progress reports.
- c) Research Supervisor will report to the Board of Studies whether the progress of a candidate's work is satisfactory / unsatisfactory.
- d) If two consecutive reports of the candidate's progress are unsatisfactory, the Chairman, Board of Studies may give him/her one more chance to improve his/her work during the next six months. At the end of this period, if the work of the candidate is still unsatisfactory, the candidate's registration will be cancelled.

14. THESIS AND EXAMINATIONS

- a) A thesis may be submitted with the express approval of the Doctoral committee.
- b) Each candidate shall submit five copies of his/her thesis. The Research Supervisor shall certify that the work done by the candidate is original and carried out under his/her supervision with the counter signature of the Director of NBRC.
- c) The Research Supervisor in consultation with the Doctoral Committee shall suggest a panel of examiners to the Chairman, Board of Studies, one year before the expected date of submission of the thesis. The suggested panel should include eight examiners from institutions other than NBRC.

- d) The Chairman, Board of Studies shall approve a board of three examiners for assessment of the thesis, from among the suggested panel. One of them shall be the Research Supervisor of the candidate, who shall act as the Chairman, Board of Examiners. In the absence of the Research Supervisor, the Co-Supervisor shall act as the Chairman, Board of Examiners. The other two will be external examiners from the panel of examiners as per 14(c) above. If the external examiners are not able to assess the thesis for any reason, alternative examiners may be nominated by chairman, Board of Studies and ratified by Board of Studies later on.
- e) The title of thesis and synopsis should be submitted to the Doctoral Committee three months prior to submission of the thesis to the Board of examiners.
- f) If one of the examiners rejects the thesis, it will be referred to another examiner from among the approved panel. In case the new examiner approves the thesis, it will be considered approved. If the new examiner also rejects the thesis, the case will be referred to the arbitration committee.
- g) If one or more examiner(s) recommend revision of thesis it may be revised with major or minor changes in the thesis. After modifications the resubmission shall be done within a period to be decided by the Chairman, Board of Studies, on the recommendation of the Doctoral committee.
- h) If more than one examiners reject the thesis, the case will be referred to the arbitration committee.
- i) The Ph.D Arbitration Committee shall consists of three members:
 - (i) a Faculty Member of NBRC (who is not a Member of the Doctoral Committee) duly nominated by Chairman, Board of studies. In case Chairman, Board of Studies happens to be the Supervisor of the student whose thesis has been rejected, Chairman, SAC, NBRC shall nominate the Faculty Member.
 - (ii) the respective Research Supervisor and
 - (iii) The Registrar, NBRC.

This committee will discuss the case referred to it and give its recommendation to the Director.

- j) If a thesis is rejected by three or more examiners, it will stand rejected and shall not be referred to another examiner, or to the arbitration committee.
- k) If a report from any of the external examiners is not received within three months, a copy of the thesis may be sent to another examiner from amongst the approved panel.
- l) After the receipt of the satisfactory report on the thesis from all the examiners, the student will make a formal presentation of the thesis to the faculty and students of NBRC. This will be followed by a viva-voce examination which will be conducted by at least 2 members of the board of examiners out of which one will be the Research Supervisor and one external examiner.

* Under extraordinary circumstances where none of the external examiners can be present at the Viva-Voce examination, the Chairman of the Board of Studies may appoint another external substitute examiner from the panel recommended by the Doctoral Committee.

15. AWARD OF THE INTEGRATED PH.D. DEGREE

After the candidate successfully completes the Viva-Voce examination and unanimous recommendation from the attending members of Board of Examiners, NBRC shall award the degree of Master of Science in Neuroscience and Doctor of Philosophy (Ph.D.).

**MINUTES OF THE SEVENTH MEETING OF THE BOARD OF STUDIES
OF NBRC HELD ON 26th MARCH 2008, AT 11.00 A.M. AT NBRC,
MANESAR.**

The 7th Meeting of the Board of Studies Committee of NBRC was held on 26th March, 2008 at NBRC. The following members attended the meeting:

1.	Prof. V. Ravindranath Director, NBRC	Chairperson
2.	Prof. D. N. Rao IISC, Bangalore	Member
3.	Prof. R. Manchanda IIT, Bombay	Member
4.	Dr. Neeraj Jain Scientist V, NBRC	Member
5.	Dr. V. Rema Scientist V, NBRC	Member
6.	Dr. Ranjit Giri Scientist IV, NBRC	Member
7.	Dr. Pankaj Seth Scientist IV, NBRC	Member
8.	Dr. Ellora Sen Scientist III, NBRC	Member
9.	Dr. Aditya Murthy Scientist III, NBRC	Member
10.	Dr. Nihar R. Jana Scientist III, NBRC	Member
11.	Dr. Soumya Iyengar Scientist III, NBRC	Member
12.	Dr. Nandini C. Singh Scientist III, NBRC	Member
13.	Dr. Shyamala Mani Scientist III, NBRC	Member
14.	Dr. Anirban Basu Scientist III, NBRC	Member
15.	Mr. K.V. S. Kameswara Rao Registrar, NBRC	Member

Item No, 7(1): Welcome by Chairperson

Prof.Vijayalakshmi Ravindranath, Chairperson, Board of Studies welcomed all the members to the 7th meeting of the Board of Studies of NBRC.

Item No. 7(2): Confirmation of the minutes of the 6th meeting of the Board of Studies of NBRC held on 10th April 2007

The minutes of the 6th meeting of the Board of Studies were confirmed, as there were no comments from Members, to whom the minutes were circulated.

Item No. 7(3): Action taken on the recommendations made by Board of Studies in its sixth meeting

Members of Board of Studies noted the action taken on the recommendations made in the sixth meeting of Board of Studies of NBRC.

However, while discussing the point on allowing students for appearing for their semester end exams, it was deliberated by all the Members that, not meeting the stipulated requirement of percentage of attendance in 3 subjects also, need not be treated as 'failure' for deciding the result and such students may be allowed to keep their term and they may be allowed to fulfill the minimum attendance requirement of 75% in the next year of course work.

Students are also to be informed of possibility of Faculty taking leave during the course work.

It is also suggested that for genuine reasons of medical grounds or due to family exigencies, if a student is not able to appear for an examination, such case need not be declared as failure and he be given another chance to re-appear for the examination.

Item No. 7(4)(i),: Approval of Doctoral Committees for Registered Ph. D. - 2006 and Integrated Ph.D.- 2006 Students

The members discussed on the proposed list of Doctoral Committees for Int.Ph.D and Ph.D.2006 registered students and approved the same.

However in respect of Ms.Tanusree Das(Ph.D-2005 student), Dr.Soumya Iyengar will be the Co-supervisor as earlier and Dr.Bapiraju suggested to be opted as an additional external Member in her doctoral committee.

Also Board of studies noted the change of Supervisor and formation of Doctoral Committee in respect of Mr. Nitin Koul(Ph.D-2005 student).

Doctoral Committees of Int.Ph.D-2006

Ms. Swetha Kameswari Dr. N.R.Jana (Supervisor) Dr. Ranjit Giri (Co-supervisor) Dr. Anirban Basu (Member) Dr. Nandini Singh (Member)	Ms. Saumya Nagar Dr. Narender K.Dhingra (Supervisor) Dr. Shyamala Mani (Co-supervisor) Dr. Pankaj Seth (Member) Dr. Soumya Iyengar (Member)
Ms. Varsha Jain Dr. Narender K.Dhingra (Supervisor) Dr. Aditya Murthy (Co-supervisor) Dr. V.Rema (Member) Dr. Shiv Kumar Sharma (Member)	Mr. Ajit Ray Prof. V.Ravindranath (Supervisor) Dr. Shiv K.Sharma (Co-supervisor) Dr. Nandini C.Singh (Member) Dr. Pankaj Seth (Member)

Doctoral Committees for Ph.D. – 2006 students

Ms. Neha Bhutani Dr. Aditya Murthy (Supervisor) Dr. Nandini C.Singh (Co-supervisor) Dr. P.K.Roy (Member) Dr. Narender K.Dhingra (Member)	Mr. Sudheendra Rao Dr. N.R.Jana (Supervisor) Dr. P.K.Roy (Co-supervisor) Dr. V.Rema (Member) Dr. Ellora Sen (Member)
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Mr. Kaushik Pramod Sharma Dr. Shiv Kumar Sharma (Supervisor) Dr.Narender K.Dhingra (Co-supervisor) Dr. V.Rema (Member) Dr. Pankaj Seth (Member)	Ms. Monica Gothwal Dr. Soumya Iyengar (Supervisor) Prof. V.Ravindranath (Co-supervisor) Dr. Shyamala Mani (Member) Dr. Shiv Kumar Sharma (Member)
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Present Doctoral Committee of Mr. Nitin Koul:

Mr. Nitin Koul(Ph.D 2005 student)

Dr. Ellora Sen (Supervisor)
 Dr. N.R.Jana (Co-supervisor)
 Dr. Pankaj Seth (Member)
 Dr. Soumya Iyengar (Member)

Doctoral Committee of Ms. Tanusree Das

Revised

Ms. Tanusree Das

Dr. Nandini C.Singh (Supervisor)
Dr. Soumya Iyengar(Co-supervisor)
 Dr. P.K.Roy (Member)
 Dr. Aditya Murthy (Member)
 Dr.Bapiraju(external member)

Item No.7(5): Ratification for Revised Doctoral Committees of Ph.D. Students where Dr. P.K. Swain and Prof. Shobhini L.Rao were either Co-supervisors / Members

The members discussed on the revised list of Doctoral Committees where Dr. P.K. Swain and Prof. Shobhini L.Rao were either Co-supervisors / Members and approved / ratified the same.

Old	Revised
Mr. Jai Prakash Sharma Dr. Nihar Ranjan Jana (Supervisor) Dr. Anirban Basu (Co-supervisor) Dr. Prabodha Swain (Member) Dr. Ellora Sen (Member)	Mr. Jai Prakash Sharma Dr. Nihar Ranjan Jana (Supervisor) Dr. Anirban Basu (Co-supervisor) Dr. Pankaj Seth (Member) Dr. Ranjit Giri (Member)
Old	Revised
Ms.Rupali Srivastava Dr. Shyamala Mani (Supervisor) Prof. V.Ravindranath (Co-supervisor) Dr. P.K.Swain (Member) Dr. N.R.Jana (Member)	Ms.Rupali Srivastava Dr. Shyamala Mani (Supervisor) Prof. V.Ravindranath (Co-supervisor) Dr. N.R.Jana (Member) Dr. Pankaj Seth (Member)
Old	Revised
Mr. Parthiv Haldipur Dr. Shyamala Mani (Supervisor) Dr. P.K.Swain (Co-supervisor) Dr. N.R.Jana (Member) Dr. Ellora Sen (Member)	Mr. Parthiv Haldipur Dr. Shyamala Mani (Supervisor) Dr. Soumya Iyengar (Co-supervisor) Dr. N.R.Jana (Member) Dr. Ellora Sen (Member)
Old	Revised
Mr. Subhadip Paul Dr. Prasun Roy (Supervisor) Dr. Aditya Murthy (Co-supervisor) Dr. NandiniC.Singh (Member) Prof. Shobini Rao (Member)	Mr. Subhadip Paul Dr. Prasun Roy (Supervisor) Dr. Aditya Murthy (Co-supervisor) Dr. NandiniC.Singh (Member) Dr. Narender K.Dhingra (Member)

Old	Revised
Ms.Radhika Rajan Dr.Neeraj Jain (Supervisor) Dr Aditya Murthy (Co-supervisor) Prof. Shobini Rao (Member) Dr Nandini Singh (Member)	Ms.Radhika Rajan Dr.Neeraj Jain (Supervisor) Dr Aditya Murthy (Co-supervisor) Dr.P.K.Roy (Member) Dr Nandini Singh (Member)
Old	Revised
Ms.K.M.Sharika Dr.Aditya Murthy(Supervisor) Dr.Neeraj Jain(Co-supervisor) Prof.Shobini L.Rao(Member) Dr.P.K.Roy(Member)	Ms.K.M.Sharika Dr.Aditya Murthy(Supervisor) Dr.Neeraj Jain(Co-supervisor) Dr.Nandini C.Singh(Member) Dr.P.K.Roy(Member)
Old	Revised
Mr. Ziauddin Dr. Rema Velayudhan (Supervisor) Dr. P.K. Roy (Co-Supervisor) Dr. Aditya Murthy(Member) Dr. Prabodha Swain(Member)	Mr. Ziauddin Dr. Rema Velayudhan (Supervisor) Dr. P.K. Roy (Co-Supervisor) Dr. Aditya Murthy Dr. Soumya Iyengar(Member)
Old	Revised
Mr. Manoj Kumar Dr. Shyamala Mani (Supervisor) Dr. Rema Velayudhan (Co-Supervisor) Prof. V. Ravindranath(Member) Dr. Prabhodha Swain(Member)	Mr. Manoj Kumar Dr. Shyamala Mani (Supervisor) Dr. Rema Velayudhan (Co-Supervisor) Prof. V. Ravindranath (Member) Dr. Ranjit Giri (Member)

Old	Revised
Ms. Varsha Agarwal Prof. V.Ravindranath (Supervisor) Dr. Pankaj Seth (Co-supervisor) Dr. P.K.Swain (Member) Dr. V.Remam (Member)	Ms. Varsha Agarwal Prof.V. Ravindranath (Supervisor) Dr. Pankaj Seth (Co-supervisor) Dr. N.R.Jana (Member) Dr. V.Remam (Member)
Old	Revised
Mr. Amit Kumar Mishra Dr. N.R.Jana(Supervisor) Dr. Anirban Basu(Co-supervisor) Dr. Pankaj Seth(Member) Dr. P.K.Swain (Member)	Mr. Amit Kumar Mishra Dr. N.R.Jana (Supervisor) Dr. Anirban Basu (Co-supervisor) Dr. Pankaj Seth (Member) Dr. Soumya Iyengar (Member)
Old	Revised
Ms. Shalaka Mulherkar Dr. Nihar Ranjan Jana (Supervisor) Dr. Anirban Basu (Co-supervisor) Dr. P.K Swain (Member) Prof. V. Ravindranath (Member)	Ms. Shalaka Mulherkar Dr.Nihar Ranjan Jana (Supervisor) Dr.Anirban Basu (Co-supervisor) Dr.Pankaj Seth (Member) Prof.V.Ravindranath (Member)
Old	Revised
Ms. Mamata Mishra Dr. Pankaj Seth (Supervisor) Dr. Prabodha K.Swain (Co-supervisor) Dr. Anirban Basu (Member) Dr. Shyamala Mani (Member)	Ms. Mamata Mishra Dr. Pankaj Seth (Supervisor) Dr. S.K.Sharma (Co-supervisor) Dr. Anirban Basu (Member) Dr. Shyamala Mani (Member)
Old	Revised
Mr. R. Arjun Dr. Aditya Murthy (Supervisor) Dr. Shobhini L.Rao (Co-supervisor) Dr. Neeraj Jain (Member) Dr. Nandini C.Singh (Member)	Mr. R. Arjun Dr. Aditya Murthy (Supervisor) Dr. P.K.Roy (Co-supervisor) Dr. Neeraj Jain (Member) Dr. Nandini C.Singh (Member)

Old	Revised
Ms.Smitha Karunakaran	Ms.Smitha Karunakaran
Prof.V.RAvindranath(Supervisor)	Prof.V.Ravindranath(Supervisor)
Dr.Soumya Iyengar(Co-supervisor)	Dr.Soumya Iyengar(Co-supervisor)
Dr.N.R.Jana(Member)	Dr.N.R.Jana(Member)
Dr.P.K.Swain(Member)	Dr.Pankaj Seth(Member)

Item No. 7(6) : Approval of panel of examiners for evaluation of Ph.D Thesis for Ph.D.-2002, Ph.D-2003 and Ph.D-2004 students

7(6)(i)

- (a) Mr. Ziauddin (Ph.D. 2002)
- (b) Mr. Amit Kumar Mishra (Ph.D. 2003)
- (c) Ms. Varsha Agarwal (Ph.D. 2003)
- (d) Ms. Manisha Chugh (Ph.D. 2003)
- (e) Ms. Uzma Saeed (Ph.D. 2004)
- (f) Mr. Shailesh Kumar Gupta (Ph.D. 2003)
- (g) Mr. Shashank Tandon (Ph.D. 2003)
- (h) Ms. Nazia Khurshid (Ph.D. 2004)

The Members discussed on the proposed list of examiners for the above students and asked the Supervisors to submit the complete details as per the format. The BOS authorized the Chairman to accept the list of examiners to be submitted by the Supervisors along with all details and support documents. BOS also suggested some modifications in the guidelines recommended vide Item 5(8) of 5th Board of Studies meeting earlier and thereby in the format while recommending names for the panel of examiners as mentioned below:

1. The proposed examiner should be guiding Ph.D student(s) himself.
2. He should have atleast 5 years of Post Doctoral Experience.
3. He should have been a senior author in indexed Publications and he have documented proof of expertise in the area of thesis.
4. The proposed examiner should not be a member of BOS or Academic Council of NBRC.

5. The collaborators of the supervisors are not to be suggested as examiners.
6. While giving the list there should be 4 Indian examiners and 4 foreign examiners.

The revised format of the list of panel of examiners is enclosed as Form "A"

7(6)(ii) Revised Panel of examiners list in respect of Mr. Manoj Kumar (Ph.D. 2002 student)

The Members discussed on the revised list of panel of examiners in respect of Mr. Manoj Kumar and approved the same.

Item No. 7(7): Approval for eligibility for submitting the Ph.D. Thesis in NBRC.

Board of Studies approved to include the following requirement as a pre-qualifying eligibility condition for students for submitting his / her Ph.D. thesis:

"Students including Integrated Ph.D should have at least one paper published / accepted as a first author in indexed Journals to be eligible to submit the Ph.D Thesis"

However the date of implementation of the above requirement for Ph.D. students will be w.e.f. 2005 Batch onwards.

Item No. 7(8): Entrance Test for Admissions into Integrated Ph.D. and Ph.D. Programmes for the year 2008 (Annexure "F")

NBRC conducted an Entrance Test on 24th February, 2008 at 4 Centres across the country at Delhi, Bangalore, Pune and Kolkatta for Admissions in to Integrated Ph.D. and Ph.D. Programmes for the year 2008.

Board of Studies has perused the pattern, statistics of various parameters and the score percentages in the entrance test etc

Prof. D.N. Rao agreed to a request made by NBRC that one of Faculties of NBRC be allowed to participate in the

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interviews of IISc whenever they are conducted next time, so NBRC also would understand their methodology.

Prof. Rao suggested that the students after their interview be divided into four major groups depending on their score in the interview (i) eighty and above (ii) seventy and above but less than eighty (iii) fifty and above but less than seventy (iv) less than fifty. He opines that this would help in minimizing the variation of marking by the Selecting Committee Members.

Item No. 7(9): Enhancement of fellowships of CSIR / UGC fellows at NBRC

Board of Studies has perused the enhancement of CSIR / UGC fellows at NBRC.

The fellowships of JRFs and SRFs in respect of CSIR and UGC qualified students have been enhanced in NBRC as per the guidelines given by CSIR and UGC as mentioned below. Arrears are to be given to the fellows w.e.f. 1st September, 2006 to 29th February, 2008 and the enhanced fellowships will be paid from March, 2008 onwards.

CSIR

S.No	Category	Existing fellowship	Revised Fellowship w.e.f. 1 st September, 2006 up to 31 st March, 2007	Revised fellowship w.e.f. 1 st April, 2007 to till date
1	JRF & SRF (NET)	8000 – 8000 – 9000	10000-10000-12000	12000-12000-14000
2	SRF (Direct)	9000	12000	14000
3	SRF Direct – (Medical, Engineering, Pharmacy, Veterinary Sciences)	9500-9500-10000	12000-12000-13000	14000-14000-15000
4	SRF (Extended)	10000	13000	15000
5	Research Associate (1)	11000	16000	16000
6	Research Associate (2)	11500	16000	17000
7	Research Associate (3)	12000	16000	18000

UGC

S.No.	Name of the fellowship	Existing fellowship	Revised rate w.e.f.1 st September, 2006 to 31 st March, 2007	Revised rate w.e.f.1 st April, 2007 to till date
1	JRF in Science, Humanities, and Social Sciences	Rs.8,000/-	Rs.10,000/-	Rs.12,000/-
2	SRF in Science, Humanities and Social Sciences	Rs.9,000/-	Rs.12,000/-	Rs.14,000/-

Item No. 7(10): Intimation of Anti-Ragging Committee in NBRC
Board of Studies noted the formation of Anti Ragging Committee and Anti ragging squad as per the instructions of UGC.,

All Members noted that Anti Ragging Committee and Anti Ragging Squad have been formed at NBRC.

Item No.7(11): Ratification for Registration Fee for Integrated Ph.D. Students

The Registration Fee of Rs.7,000/- was implemented for Integrated Ph.D. students registering their Integrated Ph.D. in similar lines to Ph.D. students.

Board of Studies ratified the implementation of Rs.7000/- towards registration fee for Integrated Ph.D students

Item No. 7(12): Any other point to be taken up with the permission of the Chair.

7(12)(i) The second year students of Integrated Ph.D. to be treated on par with second year students of Post Graduation for the purpose of getting fellowship from CSIR,UGC Etc.

Board of studies discussed the above point, Prof..D.N.Rao suggested that the matter may be dealt with in similar lines as it done at IISC, Bangalore and

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added that he would send the pattern being followed at IISC, Bangalore, to NBRC.

7(12)(ii) Assigning Labs to students

As per regulations of Ph.D. and Integrated Ph.D. Programmes of NBRC, students are assigned to different labs based on the candidate's research interests and the availability of space and requirements in the intended Supervisor's Laboratory.

The BOS suggested that if any change of the Supervisor is desired for various reasons, and if the student does not agree to work under the newly assigned supervisor in the newly assigned Lab, the students should be encouraged to leave the Institute.

**MINUTES OF THE EIGHTH MEETING OF THE BOARD OF STUDIES
OF NBRC HELD ON 3rd MARCH, 2009, AT 10.00 A.M. AT NBRC,
MANESAR.**

The 8th Meeting of the Board of Studies Committee of NBRC was held on 3rd March, 2009 at NBRC. The following attended the meeting:

- | | | |
|-----|---|-------------|
| 1. | Prof. V. Ravindranath
Director, NBRC | Chairperson |
| 2. | Prof. D. N. Rao
IISC, Bangalore | Member |
| 3. | Prof. R. Manchanda
IIT, Bombay | Member |
| 4. | Prof. P. K. Roy
Scientist VI, NBRC | Member |
| 5. | Dr. Neeraj Jain
Scientist V, NBRC | Member |
| 6. | Dr. V. Rema
Scientist V, NBRC | Member |
| 7. | Dr. Pravat Mandal
Scientist V, NBRC | Member |
| 8. | Dr. Aditya Murthy
Scientist V, NBRC | Member |
| 9. | Dr. Nihar R. Jana
Scientist V, NBRC | Member |
| 10. | Dr. Shyamala Mani
Scientist V, NBRC | Member |
| 11. | Dr. Ranjit Giri
Scientist IV, NBRC | Member |
| 12. | Dr. Yoga Narasimha
Scientist IV, NBRC | Member |
| 13. | Dr. Soumya Iyengar
Scientist IV, NBRC | Member |
| 14. | Dr. Nandini C. Singh
Scientist IV, NBRC | Member |
| 15. | Dr. Shiv K. Sharma
Scientist IV, NBRC | Member |
| 16. | Dr. Narender K. Dhingra
Scientist IV, NBRC | Member |
| 17. | Dr. Anirban Basu
Scientist III, NBRC | Member |
| 18. | Dr. Ellora Sen
Scientist III, NBRC | Member |
| 19. | Mr. K. V. S. Kameswara Rao
Registrar, NBRC | Member |

Item No 8(1) : Welcome by Chairperson

Prof.Vijayalakshmi Ravindranath, Chairperson, Board of Studies welcomed all the members to the 8th meeting of the Board of Studies of NBRC.

Item No 8(2) : Confirmation of the minutes of the Seventh meeting of the Board of Studies held on 26th March, 2008

The minutes of the 7th meeting of the Board of Studies were confirmed, as there were no comments from Members, to whom the minutes were circulated.

Item No 8(3): Action taken on the recommendations made by Board of Studies in its seventh meeting

Members of Board of Studies noted the action taken on the recommendations made in the seventh meeting of Board of Studies of NBRC.

Item No 8(4) : (i) Approval of Doctoral Committees for Registered Ph. D. - 2007 and Integrated Ph.D- 2007 Students
(Annexure "A")

The members discussed on the proposed list of Doctoral Committees for Int.Ph.D-2007 and Ph.D.2007 registered students and approved the same.

Item No 8(5) : Approval of panel of examiners for evaluation of Ph.D Thesis for Ph.D.-2004 and Ph.D-2005 students (Annexure B)
8(5)(i).

The Members discussed on the proposed list of examiners for the below mentioned students and suggested minor changes in respect of Ms.Tanusree Das and approved the same.

- (a) Ms.Shalaka Mulherkar(Ph.D. 2004)
- (b) Mr.Manoj Kumar Mishra (Ph.D. 2004)
- (c) Mr.Arjun (Ph.D. 2004)
- (d) Ms.Mamata Mishra(Ph.D. 2004)
- (e) Mr.Budhachandra Singh(Ph.D. 2004)
- (f) Mr.Rahul Chaudhary(Ph.D – 2006)
- (g) Mr.Alok Gupta(Ph.D – 2005)

- ✓
- (h) Ms.Neha Sehgal(Ph.D – 2005)
 - (i) Ms.D.Lalitha(Ph.D-2005)
 - (j) Mr.Jai Prakash Sharma(Ph.D-2005)
 - (k) Ms.Tanusree Das(Ph.D-2005)
 - (l) Mr.Parthiv Haldipur(Ph.D-2005)
 - (m)Ms.Rupali Srivastava (Ph.D-2005)

Item No 8(6):

Setting of question paper for final examinations at NBRC

The members discussed on the setting of question paper for final semester end examinations for the course work students at NBRC and approved that atleast 3 new names of External Examiners may be given by faculty each time they submit the list of external examiners for setting the question paper.

Item No 8(7):

- 8(7)(i) Approval for Revision of syllabus for Matlab and Computational Neuroscience Course of Dr.Nandini C.Singh (**Annexure C**)

The members discussed on the revised syllabus for Computational Neuroscience course and approved the same.

- 8(7)(ii) Approval for including Neuroimaging Course in the curriculum of Integrated Ph.D and Ph.D students during their first year course work.

The members discussed on the syllabus for neuroimaging course and suggested that the syllabus may be submitted in detail and authorised Chairperson, Board of studies to approve the syllabus. The detailed syllabus has been enclosed as **Annexure - D**

✓

8(7)(iii) Approval for Revised syllabus for Lab-Rotation of Integrated Ph.D / Ph.D Students (**Annexure E**)

The members discussed on the revised syllabus for Lab-Rotation and approved the same.

8(7)(iv) Discussion on Lab-Rotation

The members discussed the procedure of Lab-Rotation and suggested as mentioned below:

a) There will be 3 different divisions / rotations namely

- 1) Computational / Imaging
- 2) Systems
- 3) Molecular

b) There will be rotation for 3 months in each division

c) VIVA to be conducted at the end of each Lab Rotation and a minimum pass marks of 50% is required to be scored in each Viva. The average of all the three Vivas will have to be taken as final VIVA score for the purpose of Lab Rotation.

Item No 8(8): Any other point to be taken up with the permission of the Chair.

Prof.Vijayalakshmi Ravindranath, Director, NBRC and Chairperson, BOS, NBRC announced that this meeting will probably be the last BOS for her as she would be leaving NBRC soon and thanked all the members.

All members commended her dedicated efforts in establishing NBRC and shaping it as a pioneering Institute of International standards, by her great vision and leadership qualities. The external experts Prof.D.N.Rao, IISc, Bangalore and Prof.R.Manchanda, IIT Bombay requested her to provide her peerless guidance and expertise to NBRC even after leaving NBRC. Everybody thanked her .

The meeting ended with vote of thanks to the chair as there was no other agenda item.

ANNEXURE A

Item No.8(4)(i)

Doctoral Committees for Integrated Ph.D. – 2007 students

Ms.Megha Maheswari Dr.N.R.Jana(Supervisor) Dr.Ranjit Giri(Co-supervisor) Dr.Anirban Basu (Member) Dr.Soumya Iyengar(Member)	Mr. Sadashib Ghosh Dr. Ellora Sen (Supervisor) Dr.N.R.Jana (Co-supervisor) Dr. Pankaj Seth (Member) Dr. Ranjit Giri (Member)
Ms.Shaily Malik Dr.Pankaj Seth(Supervisor) Dr.Anirban Basu(Co-supervisor) Dr.Soumya Iyengar(Member) Dr.Shyamala Mani(Member)	Ms.Megha Sharda Dr.Nandini C.Singh(Supervisor) Dr.N.R.Jana(Co-supervisor) Dr.Soumya Iyengar(Member) Dr.P.K.Roy(Member) Dr.Amit Sen(External Member)
Ms.Manvi Goel Dr.Narender Dhingra (supervisor) Dr.Pankaj Seth (co-supervisor) Dr.Nihar Jana (member) Dr.Soumya Iyengar (member)	Mr.Deepak Poria Dr.Narender Dhingra (supervisor) Dr.Shiv K. Sharma (co-supervisor) Dr.Neeraj Jain (member) Dr.Yoganarasimha (member)
Ms.Suhela Kapoor Dr.P.K.Roy(Supervisor) Dr.Anirban Basu(Co-supervisor) Dr.Nandini C.Singh(Member) Dr.Nihar Jana(Member)	Mr.Pavan Kumar Dr.Shyamala Mani(Supervisor) Prof.V.Ravindranath(Co-supervisor) Dr. Soumya Iyengar(Member) Dr. Ellora Sen(Member)
Ms.Pooja Vishwanathan Dr.Aditya Murthy(Supervisor) Dr. PK Roy(Co-supervisor) Dr. Neeraj Jain(Member) Dr. Sowmya Iyengar(Member)	Mr.Atul Gopal P.A Dr.Aditya Murthy(Supervisor) Dr. Nandini Singh(Co-supervisor) Dr. PK Roy(Member) Dr. Yoga Narasimha(Member)

Doctoral Committees for Ph.D. – 2007 students

Mr. Deobrat Dixit Dr. Ellora Sen (Supervisor) Dr.N.R.Jana (Co-supervisor) Dr. Pankaj Seth (Member) Dr. Ranjit Giri (Member)	Mr.Deepak Kumar Kaushik Dr.Anirban Basu(Supervisor) Dr.N.R.Jana(Co-supervisor) Dr.Ranjit Giri(Member) Dr.Pravat K.Mandal(Member)
Mr.Pankaj S.Ghate Dr.Ranjit Giri(Supervisor) Dr.N.R.Jana(Co-supervisor) Dr.Pankaj Seth(Member) Dr.Anirban Basu(Member)	Ms.Kiran Dr. Shiv K Sharma(Supervisor) Dr. Neeraj Jain(Co-supervisor) Dr. Pankaj Seth(Member) Dr. Narender Dhingra(Member)
Mr.Kashif Mahfooz Dr.Shyamala Mani(Supervisor) Prof.V.RAvindranath(Co-supervisor) Dr. Shiv K.Sharma(Member) Dr. Nihar Jana(Member)	

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Annexure C

Item No 8(7)(i): Approval for Revision of syllabus for Matlab and Computational Neuroscience Course of Dr.Nandini C.Singh

Computational Neuroscience syllabus

Linear Response Theory – Properties of a linear system, convolution and Fourier transforms

Single neuron models
Integrate and Fire model

Multi compartment models – an overview
Network Models

Neural Encoding
Introduction, Spike Trains and Firing Rates, Spike Train Statistics,
The Neural Code, Estimating Firing Rates,

Neural Decoding and Information theory
Entropy, Mutual Information, Bayes theorem.

Adaptation and learning
Synaptic plasticity rules, supervised and unsupervised learning, classical conditioning, reinforcement learning

References:

Theoretical Neuroscience – Computational and Mathematical Modelling
of Neural System by Dayan and Abbot

Computational Neuroscience and Matlab

Matlab

Introduction to computation

Source code to execution, compiling, debugging; Flow charts

Program structure & Flow of control

Arrays, Strings, Structures

Getting started with MATLAB

Basic Syntax and variables

Overview of matlab functions

Mathematics with Vectors and Matrices

M and Mat files, function files and scripts.

Manipulation of data

Control flow and loops

Writing and debugging MATLAB program.

References:-

Essential MATLAB for Scientists and Engineers -

by Butterworth Heinemann
and Brian D. Hahn

Getting Started with MATLAB: A Quick Introduction for Scientists -
and Engineers

- by Rudra Pratap

Topic	LAB
1. Basic MATLAB features; simple matrices; built-in functions	Practice simple matrices and built-in functions
2. Matrix operations; save/load; script files; user functions	Writing user functions
3. Relational and logical operations; flow control	More user functions
4. More on functions; graphics; character strings	Functions and plots
5. More on flow control and character strings	More functions and plots
6. Polynomial regression	Nested loops; fitting curves to data
7. Curve fitting, interpolation	and evaluation of functions,
8. Neurophysiological Data:	Binning, histograms and firing rates

Text Books for Computational Neuroscience

1. Theoretical Neuroscience: Computational and Mathematical Modelling Of Neural Systems by P.Dayan
2. Programming in MATLAB by Sen

Item 8(7)(ii) : Approval for including Neuroimaging Course in the curriculum of Integrated Ph.D and Ph.D students during their first year course work.

NEUROIMAGING COURSE

Instructor: Dr. Pravat K Mandal

Classical Nuclear magnetic Resonance (NMR) Spectroscopy

Nuclear Magnetism, The Bloch Equations, the One Pulse NMR Experiment, Line width and line shape

Theoretical Description of NMR Spectroscopy

Product Operator Formalism; Operator Spaces, Basis Operators; Evolution In The Product Operator Formalism; Single –Quantum Coherence and Observable Operators; Multiple Quantum Operators; Coherence Transfer and Generation of Multiple Quantum Coherence; Examples of Product Operator Calculations

Magnetic Resonance Imaging (MRI)

Image Weighting and Contrast

Introduction: Image Contrast; Contrast mechanisms; Relaxation in Different tissues; T1 contrast; T2 Contrast; Proton Density Contrast; Weighting T2* Decay; Pulse Sequences

Encoding and Image Formation

Encoding; Introduction; Gradients; Slice Selection; Frequency Encoding; Phase Encoding; Data Collection and Image Formation; Introduction; K space Descriptio; K space Filling; Fast Fourier Transform (FFT)

Important terms in imaging

Parameters and trade-offs; Introduction; Signal to Noise Ratio(SNR); Contrast to Noise Ratio(CNR); Spatial Resolution; Scan Time; Trade-offs; Voxel size and region of interest selection.

Pulse Sequences

Introduction; Spin Echo pulse sequences; Conventional spin echo; Fast or turbo spin echo; Inversion Recovery; Fast Inversion Recovery; STIR (Short tau inversion recovery); FLAIR(Fluid Attenuated inversion recovery); Gradient Echo Pulse Sequence; Echo Planner imaging (EPI);Parallel Imaging Techniques

Magnetic Resonance Spectroscopy (MRS)

Basic principles of MRS, voxel selection, single voxel and multiple voxel, pulse sequence, PRESS and STEAM,

Functional Magnetic Resonance Imaging (fMRI)

Basic principles of fMRI, Blood oxygenation dependent contrast (**BOLD**) and its application in fMRI; Analysis of BOLD Pulse sequence of and optimization.

References:

- The Essential Physics of Medical Imaging (J. T. Bushberg et al.)
- Magnetic Resonance Spectroscopy and its application in Alzheimer's disease. Concepts in Magnetic Resonance, Pravat K Mandal, Vol 30A 1-25 (2007)
- MRI in practice (Westbrook, Roth and Talbot)

Annexure E

8(7)(iii) Approval for Revised syllabus for Lab-Rotation of Integrated Ph.D / Ph.D Students

Each Integrated Phd / Ph.D student will be associated with one faculty but will spend time with each of the faculty members mentioned below and be exposed to the following.

Dr. Aditya Murthy

- 1) Behavioral recordings off eye and hand in sensorimotor tasks
- 2) examining kinematics and reaction times using matlab.

Dr. Prasan Roy

Structural imaging; Acquisition parameters, Contrast enhancement/contrast agents, Perfusion imaging, Diffusion imaging, Voxel based morphometry, Arterial spin labeling, Tensor imaging, CSF/Blood Flow imaging, Image processing.

Dr. Pravat Mandal

- * Principles of MRS spectroscopy
- * Pulse sequence for MRS techniques
- * live demonstration
- * MRS data processing/computation

Dr. Nandini Singh

Basics of fMRI. Paradigm design using Eprime. Analysis of fMRI data - pre-processing, post processing and data interpretation using a simple speech perception/production task