

The 51st meeting of the School Board of the School of Sciences was held on 16th February, 2015 at 11.00 a.m. in the Conference Room of Block D, IGNOU, Maidan Garhi, New Delhi – 110068.

The following members were present:

1. Prof. Vijayshri, Director (SOS), Chairperson
2. Prof. R.P. Tandon, Department of Physics and Astrophysics, University of Delhi
3. Prof. S. Kumaresan, School of Mathematics and Statistics, University of Hyderabad
4. Prof. H. B. Srivastava, Centre of Advanced Study in Geology, Banaras Hindu University
5. Prof. Rajender Parsad, Indian Agricultural Statistics Research Institute
6. Prof. Seemi Farhat Basir, Jamia Millia Islamia
7. Prof. S.C. Garg, SOS, IGNOU
8. Prof. B.S. Saraswat, SOS, IGNOU
9. Prof. S.S. Hasan, SOS, IGNOU
10. Prof. Parvin Sinclair, SOS, IGNOU
11. Prof. Sunita Malhotra, SOS, IGNOU
12. Prof. Poornima Mital, SOS, IGNOU
13. Prof. Geeta Kaicker, SOS, IGNOU
14. Prof. Jaswant Sokhi, SOS, IGNOU
15. Prof. Neera Kapoor, SOS, IGNOU
16. Prof. S.R. Jha, SOS, IGNOU
17. Prof. B. I. Fozdar, SOS, IGNOU
18. Prof. Amrita Nigam, SOS, IGNOU
19. Prof. M.S. Nathawat, SOS, IGNOU
20. Prof. K. Barik, SOSS, IGNOU
21. Prof. T. K. Jena, SOHS, IGNOU
22. Prof. M. Parhar, STRIDE, IGNOU
23. Dr. Manoj Kulshreshtha, SOET, IGNOU
24. Dr. S. Venkataraman, SOS, IGNOU
25. Dr. Bano Saidullah, SOS, IGNOU
26. Dr. Kamalika Banerjee, SOS, IGNOU
27. Dr. Vijay Kumar Baraik, SOS, IGNOU
28. Dr. Sanjay Gupta, SOS, IGNOU
29. Dr. Seema Kalra, SOS, IGNOU
30. Dr. Kakoli Gogoi, SOS, IGNOU

31. Shri Prabhat Kumar Sangal, SOS, IGNOU

Prof. Sujatha Varma and Prof. J. A. Farooqi could not attend the meeting.

At the outset, the Chairperson welcomed the members of the School Board and placed on record the School Board's appreciation for the contributions made by the outgoing members of the Board, namely, Prof. J.M. Khurana, Prof. Oommen V Oommen, Prof. M.H. Qureshi, Prof. J.P. Srivastava and Prof. S.K. Gakhar in enriching the deliberations of the Board. The Chairperson also welcomed the new members of the School Board present in the meeting, namely, Prof. R.P. Tandon, Prof. S. Kumaresan, Prof. H. B. Srivastava, Prof. Rajender Parsad and Prof. Seemi Farhat Basir. Thereafter, the following items on the agenda were deliberated:

Item No. 1: To confirm the minutes of the 50th meeting of the School Board of the School of Sciences held on 29th September, 2014 and to note the action taken thereon.

SB 51.1.1 The School Board was informed that the Minutes of the 50th meeting of the School Board were circulated on November 21, 2014 and no comments had been received.

SB 51.1.2 The Minutes of the 50th meeting of the School Board were confirmed as circulated.

SB 51.1.3 The Action Taken Report was noted by the School Board.

In this context, the School Board was informed that the lists of Doctoral Committees were sent to the Vice Chancellor for approval on November 28, 2014. The Vice Chancellor returned the file with an approval of the following noting of Director, Research Unit:

'School should reconsider it and a revised list of senior experts be proposed for approval.'

The Chairperson informed the School Board that these observations had been shared with all Discipline Groups. The responses of all Discipline Groups were shared with the School Board. After deliberating on the matter, the Board noted that:

1. Research in Science Disciplines in the School was being carried out in a number of super specialised areas. Therefore, a list of Experts having only broad expertise would not be sufficient to perform all functions of the Doctoral Committee. Moreover, there were about five to six Experts from each area of specialisation with about three to four Experts from Delhi in most lists.
2. Names of Assistant Professor/Scientist C with a minimum of 5 years post-doctoral experience could be included in the list of members of the Doctoral Committee, provided they had significant research work to their credit as evidenced by publications in high quality journals.

SB 51.1.5 After detailed clarifications and discussion, the School Board reiterated its earlier recommendation of the Doctoral Committees made in the 50th meeting of the School Board. A copy of the confirmed Minutes of the 50th meeting of the School Board held on September 29, 2014 (without Annexures) and the Action Taken Report are placed at **Annexures 1 and 2**, respectively.

Item No. 2: Matters arising from the minutes.

SB 51.2.1 The following matters arising out of the Minutes were taken up:

One of the members of the School Board raised the issue of including the names of Faculty members from Geology Faculty as course writers for the B. Sc. courses in Geography.

SB 51.2.2 The deliberations and decisions of the School Board on the matter in the 50th School Board meeting and earlier meetings were reiterated, in that Geography and Geology Faculties had several areas of common expertise and interest. Therefore, as a general principle, Faculty members from both Disciplines should contribute as much as possible as Course writers, paper setters, evaluators, Members of Moderation Boards in various courses in the programmes being developed or on offer. In this light, the suggestions of School Board members had been incorporated in the lists of course writers for the Geography courses and the lists of paper setters, evaluators, members of Moderation Boards in the Programme PGCGI. The lists appended to the Minutes of the 50th meeting of the School Board would remain unchanged.

Item No. 3: To confirm the Minutes of the 11th Meeting of the Standing Committee of the School Board of the School of Sciences held on January 23, 2015.

SB 51.3.1 The Minutes of the 11th meeting of the Standing Committee of the School Board held on January 23, 2015 were placed before the School Board for consideration and confirmation. While considering the Minutes, the School Board re-iterated that the institutional affiliations of retired Experts must be mentioned in all lists.

While considering the lists of additional Evaluators for the B. Sc. courses in Life Sciences, the Board recommended that the request of Prof. Pushplata Tripathi who is on leave from the School of Sciences, IGNOU and currently the Pro-Vice Chancellor of Guru Gobind Singh Indraprastha University, Delhi to be paper setter, evaluator and member of Moderation Boards in the courses she was involved in, may be accepted.

The Board also agreed with the suggestion of the Chairperson that, in future, only the additions/deletions in the lists of paper setters, evaluators and members of Moderation Boards be put forth for its approval, once in a year. However, the School should ensure that complete updated lists of paper setters, evaluators and members of Moderation Boards are sent to the Division concerned.

SB 51.3.2 With these observations, the Minutes of the 11th meeting of the School Board Standing Committee were confirmed by the School Board. A copy of the confirmed Minutes (with its Appendices) is placed at **Annexure 3**.

Item no. 4: To consider and recommend the names of Moderation Board members for the Mathematics courses in Bachelor's Degree Programme, the Certificate Programme in Teaching of Primary School Mathematics (CTPM), Master's programme in Mathematics with Applications in Computer Science [M.Sc.

(MACS)], the course OMT-101 of the Bachelor’s Preparatory Programme, Ph.D. in Mathematics (PHDMT) and Ph.D. in Mathematics Education (PHDMTED).

SB 51.4.1 The School Board considered and recommended the names of Moderation Board members for the Mathematics courses in Bachelor’s Degree Programme, the Certificate Programme in Teaching of Primary School Mathematics (CTPM), Master’s programme in Mathematics with Applications in Computer Science [M.Sc. (MACS)], the course OMT-101 of the Bachelor’s Preparatory Programme, Ph.D. in Mathematics (PHDMT) and Ph.D. in Mathematics Education (PHDMTED), placed before it.

SB 51.4.2 It was noted that the name of an expert from outside Delhi had also been included in one of the lists of Moderation Board members. While recommending the name of the Expert, the School Board decided that the option of including Experts from outside Delhi as members of Moderation Boards could be exercised for all courses of the School provided that the financial implications were limited to reimbursement of local conveyance. The lists recommended by the School Board are placed at **Annexures 4a to f**.

Item no. 5: To consider and approve the guidelines for empanelment of Academic Counsellors for the Foundation Course in Science and Technology (FST-1) offered in the Bachelor’s Degree Programme.

SB 51.5.1 The School Board was informed of the criteria for empanelment of Academic Counsellors followed so far, viz.:

Criteria followed so far:

Academic qualification : Ph.D. in any discipline of Science.

Teaching experience : Minimum 5 years of teaching experience in a College/University.

The Board was informed that several requests had been received from the Regional Directors and Regional Services Division to review the criteria, particularly for Study Centres in remote and rural areas, as Academic Counsellors having these qualifications were difficult to find in such areas. The Course Team of FST-01 had reviewed the criteria in the light of these requests. The following criteria were submitted for the consideration and approval of the School Board:

Revised Criteria

1. Academic Counsellors from Study Centres in College/Universities:

Academic qualification : Ph.D. /MPhil in any discipline of Science.

Teaching experience : Minimum 2/4 years of teaching experience in a College /University.

2. Academic Counsellors from Study Centres in remote and rural areas:

- Academic qualification : M.Sc. in any discipline of Science.
Experience : Minimum 2 years of teaching experience in a College /University, and familiarity about work at IGNOU.

3. Academic Counsellors from other Organisations/Institutions

- Academic qualification : M.Tech./Research Scientist
Experience : Minimum 4 years of teaching/research experience in a College /University/ Organization/Institution, and familiarity about work at IGNOU.

4. Academic Counsellors from IGNOU

All interested Faculty Members of the School of Sciences.

SB 51.5.2 The School Board approved the following guidelines for empanelment of Academic Counsellors for the Foundation Course in Science and Technology (FST-1) offered in the Bachelor's Degree Programme:

1. Academic Counsellors from Study Centres in College or Universities:

- Academic qualification : Ph.D. /MPhil in any discipline of Science.
Teaching experience : Minimum teaching experience in a College or University: 2 years for Ph.D. degree holders /4 years for MPhil degree holders and familiarity with IGNOU.

2. Academic Counsellors from Study Centres in remote and rural areas*:

- Academic qualification : M.Sc. in any discipline of Science.
Experience : Minimum 2 years of teaching experience in a full-time position in a College or University and familiarity with IGNOU.

* Provided that Ph.D. or MPhil degree holders are not available.

3. Academic Counsellors from other Organisations/Institutions

- Academic qualification : M.Tech./Research Scientist
Experience : Minimum 2 years of teaching/research experience in a College/University/ Organization/Institution, and familiarity with IGNOU.

4. Academic Counsellors from IGNOU

All interested Faculty Members of the School of Sciences.

Item no. 6: To consider and recommend the list of evaluators for the Foundation Course in Science and Technology (FST-1).

SB 51.6.1 The School Board considered the list of evaluators for the Foundation Course in Science and Technology (FST-1) offered in the Bachelor's Degree Programme submitted by the Course team. The Board noted that the list included Associate Professors in Hindi at S. Nos. 13 to 15 and recommended that these names be deleted.

SB 51.6.2 The list of evaluators recommended by the School Board for the Foundation Course in Science and Technology (FST-1) is placed at **Annexure 5**.

Item no. 7: To consider and approve the format and pattern of the term-end examination for the theory courses of the Post Graduate Diploma in Applied Statistics with specialisation in Industrial Statistics.

SB 51.7.1 The School Board was informed that an Expert Committee Meeting was held on December 22, 2014 to discuss the format and pattern of the term-end examination for the theory courses of the Programme "Post Graduate Diploma in Applied Statistics (with specialisation in Industrial Statistics)". The following recommendations of the Expert Committee on the design and pattern of the question papers of the theory courses (vide Minutes at **Annexure 6**) were placed for the consideration of the Board:

- The first question should be compulsory and should be based on all 4 blocks. It should consist of 5 short answer type questions of 2 marks each.
- For the remaining four questions, one question with internal choice should be framed from each block.
- Thus, a total of 5 questions (of 10 marks each) should be attempted by the students.
- Questions should be framed so as to test the analytical skills of the candidates and should not test direct application of formulae.
- Candidates should be allowed to use non-programmable scientific calculators in the examination.

The School Board also considered the course-wise list of formulae finalised by the Expert Committee and the Committee's suggestion that the list should be sent to the Examination Centres in the form of a booklet to be made available to the candidates during the term-end examination and that the statistical tables should also be included in this booklet.

SB 51.7.2 The School Board approved the recommendations of the Expert Committee about the format and pattern of the term-end examination for the theory courses with the second recommendation modified as follows for greater clarity:

- For the remaining four questions, as far as possible, one question should be framed from each block and it may have internal choices.

The School Board further recommended that questions may be framed to test comprehension and understanding of the courses apart from testing the

applications of concepts. It was also recommended that a set of guidelines be sent to the paper setter for each course and Question Banks be created for the courses in the programme.

The Board approved the booklet containing the course-wise list of formulae placed before it. It also recommended that the booklet (akin to log tables) should also contain statistical tables and should be made available to the students at the Examination Centres during the term-end examination. The booklet is placed at **Appendix 1 of Annexure 6**.

Item no. 8: To consider and approve the minutes of meetings of Course Design Committees for 3rd Level Geography Courses of the B.Sc. Programme along with detailed course structures and syllabi, and to recommend course writers and editors for the courses.

SB 51.8.1 The School Board was informed that the Course Design Committee meetings for the third level courses of Geography for B. Sc. were held from November 25-27, 2014, January 30, 2015 and February 5, 2015 to work out the detailed course structure and syllabi and to recommend the names of Course writers and Editors, for the following courses:

1. Environmental Geography (BGG-007),
2. Evolution of Geographical Thought (BGG-008),
3. Application of Remote Sensing and GIS in Geography (BGGL-004),
4. Geography of India (BGG-006), and
5. Climatology and Oceanography (BGGE-002).

The minutes of the meetings, along with the detailed syllabi / lab exercises and the names of Course writers and Editors for each course (**Annexure 7**) were placed before the School Board for consideration and approval.

While considering the item, one of the members desired to know the status of development of 1st and 2nd level courses. The Board was informed that the English version of the courses had been received from Editors. Some of these had been sent for translation and the remaining would be sent for translation soon.

While considering the syllabus of the course BGG-007 entitled Environmental Geography, members of the Board expressed concern that some topics exhibited gender bias. The Board recommended that the title of Unit 4 should be changed to **Human-Environment Interface** and the phrase Man-Environment Relationship should be replaced by Human-Environment Relationship wherever it occurred in the syllabi of the courses placed before it. It was also recommended that the title of Block 2 in BGG-007 be modified to **Pollution and Environmental Degradation**.

While deliberating on the syllabi of various courses in the B. Sc. Geography programme, the School Board recommended the following:

- a) The unit numbers should be listed in continuation in accordance with the practice followed in IGNOU.
- b) For courses that contained topics in which in-house expertise was available, the willingness of the Faculty members who had the expertise and had developed

courses in similar areas earlier could be sought by the concerned Course Coordinators/Course teams. The areas of specialisation of Course writers should be listed along with their names.

- c) The lists of books given with each course be classified into two categories: i) The list of one or two books that would be recommended as further reading and would be made available at the Study Centres; ii) The list of books that students may like to read for enrichment but would not be made available at Study Centres. Moreover, as far as possible, recently published books should be included.
- d) The Board recommended that the name of Dr. B. Deshmukh, Associate Professor in Geology be included in the list of Course Writers for the Practical Course BGGL-004 entitled Applications of Remote Sensing and GIS.

SB 51.8.2 With these observations, the School Board approved the syllabi, the minutes of the meetings along with the detailed syllabi / lab exercises and recommended the names of Course Writers and Editors for each course. The syllabi and names of Course Writers and Editors of all five courses approved by the School Board are appended at **Annexure 8**.

Item no. 9: To consider and approve the Phase Zero form for the revised elective course in Linear Algebra in the revised structure of the Mathematics component of Bachelor's Degree Programme.

SB 51.9.1 The School Board was informed that the recommendations of the Expert Committee meeting of Mathematics for the overall review of the Mathematics elective courses of the Bachelor's Degree Programme were placed in the 41st meeting of the School Board of the School of Sciences held on Nov. 29, 2010. The Board approved the syllabi in principle suggesting a few modifications.

The syllabi incorporating the modifications suggested by the School Board in its 41st meeting were discussed in two Expert Committee meetings and the recommendations were placed in the 44th meeting of the School Board of the School of Sciences held on 2nd March and 30th March, 2012.

The recommendations of the Expert Committee along with the overall syllabi approved by the School Board of the School of Sciences in its 44th meeting were placed before the Academic Council in its 61st meeting held on 19th September, 2013 for consideration and approval.

The Academic Council while considering the agenda item took the decision that the School of Sciences should submit the proposal in phase zero forms for each course for its consideration. The phase zero forms for the five electives in Mathematics for the BDP, namely, Calculus, Elementary Algebra, Analytical Geometry, Advanced Calculus and Differential Equations I, in the revised structure of Mathematics component of the BDP along with the revised structure were approved in the 49th meeting of the School Board held on 28-04-2014.

In continuation of the process of revision of Mathematics electives of the Bachelor's Degree programme, the Phase Zero Form for the course entitled **Linear Algebra**

from the Mathematics Discipline Group was placed before the School Board for consideration and approval (**Annexure 9**).

SB 51.9.2 The School Board deliberated on the Phase Zero form for Linear Algebra and recommended that a more detailed summary of the feedback obtained from all stakeholders should be presented including the topics which were found to be difficult by learners. The Board further recommended that more detailed information than given in the Phase Form be provided about the proposed A/V, web-mediated and IRC components.

SB 51.9.3 In the light of these discussions, the School Board decided that the Phase Zero form of the course Linear Algebra be resubmitted with all relevant details.

Item no. 10: To consider and approve the Phase Zero forms of the following Application Oriented Courses (AOCs) for the Bachelor's Degree Programme approved in the 50th School Board meeting held on 29th September, 2014

(i) Fresh Water Aquaculture (8 credits: 6 credits theory + 2 credits Laboratory)

(ii) Coastal Aquaculture (8 credits: 6 credits theory + 2 credits Laboratory)

SB 51.10.1 The School Board was informed that the AOC entitled Aquaculture Practices (AAQ-001) had been approved by the Academic Council in its 62nd meeting held on April 11, 2014. The Life Sciences Discipline Group had proposed to offer two additional AOCs, namely, Fresh Water Aquaculture (8 credits) and Coastal Aquaculture (8 credits) in the basket of skill based courses in the Bachelor's Degree Programme. This effort would equip the undergraduate learners with the vocational skills in the area of Aqua farming and Aqua ranching. These courses would provide technical know-how and develop entrepreneurial skills in fisher folk and also create awareness and promote green aquaculture. It was envisaged that the existing AOC in Aquaculture Practices (AAQ-001) would be offered along with 8 credits of Fresh Water Aquaculture course to form a 16 credit package named **Fresh Water Aquaculture Practices**. Likewise, the Coastal Water Aquaculture course worth 8 credits would be offered together with Aquaculture Practices (AAQ-001) of 8 credits as a 16 credits package named **Coastal Aquaculture Practices**.

The syllabi of the courses were approved by the School Board of School of Sciences in its 50th meeting held on 29th September, 2014.

SB 51.10.2 The School Board deliberated on the Phase Zero forms for the AOCs Fresh Water Aquaculture and Coastal Aquaculture (**Annexures 10 and 11**) and observed that since the AOCs were to be offered to all BDP students, the enrolment figures in the forms should be changed accordingly. Further, the courses would have a Lab component and not a Project component as mentioned in the form. The number of proposed IRCs and counselling sessions also needed to be spelt out for the AOCs. The Board also desired to know why the proposed A/V component was given as 4, and was informed that the number was kept low as the existing A/V resources created in-house as well as by external agencies would be used in these courses.

SB 51.10.3 The Board was informed that the existing B. Sc. Study Centres with departments of Zoology could be used for practical training. The Course Coordinators also assured the Board that preliminary practical skills that could be practiced at home would be

taught through videos. The Board pointed out that the budgetary requirements needed to reflect the costs of printing in both English and Hindi and should be Rs. 5 Lakh instead of the proposed Rs. 2.5 Lakh for both courses.

SB 51.10.4 The School Board approved the Phase Zero forms for the AOCs Fresh Water Aquaculture and Coastal Aquaculture with these modifications. The Phase Zero forms approved by the School Board are placed at **Annexures 12 and 13**.

Item no. 11: To consider and approve the Phase-II form for M.Sc. (Physics).

SB 51.11.1 The School Board was informed that the Physics Discipline proposed to develop a Master's Degree Programme in Physics (M.Sc. in Physics) through Distance Mode.

The Phase-I form (in the revised format) for the programme had been approved by the Academic Programme Committee in its 44th meeting held on 02.04.2014. Subsequently, the programme structure, detailed syllabus and developmental strategy had been discussed and finalized under the guidance of the Expert Committee for the programme. The Phase Two form for the Master's Degree Programme in Physics (M.Sc. in Physics) through Distance Mode proposed by the Physics Discipline Group along with the requisite details (**Annexure 14**) was being placed before the School Board for consideration and approval

SB 51.11.2 The School Board deliberated in detail on all aspects of the development and implementation of the programme as stated in the Phase Two Form. Members of the Board raised specific questions on the structure of the programme, syllabi of the courses, mode of delivery and qualifications of Counsellors, assessment strategy, etc. To the query about the need survey, the Board was informed that the details of the need survey had been presented in the Phase 1 form which had been approved by the Academic Programme Committee.

The Board suggested that the qualification of Academic Counsellors be revised as follows:

Full time Assistant Professor with Ph.D. and minimum two years of PG teaching experience

or

Full time PDF/RA/Scientist B with Ph.D. and minimum 2 years post-Ph.D. teaching/research experience at PG level.

The Board was informed that the programme would be offered on a pilot basis for the first few years.

SB 51.11.3 With the above recommendation, the School Board approved the proposal together with the Phase Two form for M.Sc. (Physics).

Item no. 12: To consider and approve the proposal of adding an Application Oriented Course on GIS to the Bachelor's Degree programme and approve the names of Experts for the Course Design Committee.

SB 51.12.1 The School Board was informed that GIS is considered as a powerful tool for decision-makers across a wide range of disciplines, industries and organisations as it enables them to analyse, understand spatial patterns/ relationships/ trends with

the use of maps and images, and produce outputs. Hence, it is now believed to be critical to many aspects of governance and nation building. The National Task Force on Geospatial Education, constituted in 2010 by MHRD to address the issue of capacity building and geospatial education in the country has determined in its report that a large number of skilled human resources is required in India in this area.

It was being proposed by the Geology Discipline Group that an Application Oriented Course (AOC) on Geographic Information System (GIS) worth 8 credits be developed to provide basic know-how and practical skills of map reading, data creation, conversion, digitisation, geo-referencing, map composition, etc. to learners enrolled in BDP.

The self-learning materials for the AOC could be adapted largely from the existing self-learning materials of the Post Graduate Certificate in Geoinformatics (PGCGI) programme, which has been on offer since July, 2014. The possibility of developing an AOC on GIS would be explored in an Expert Committee meeting after the approval of the proposal by the School Board.

SB 51.12.2 The School Board approved the proposal. The concept note for the proposed AOC and the names of experts for the Expert Committee for finalising the syllabus of the course, approved by the School Board, are placed at **Annexure 15**.

Item no. 13: To consider and approve the Minutes of the 11th and 12th meetings of the Doctoral Committee for Geology held on 13th and 15th January, 2015 to assess/review the six monthly progress of three candidates registered in the Ph.D. Geology programme.

SB 51.13.1 The School Board was informed that the 11th Meeting of the Doctoral Committee for Geology was held on 13th January, 2015 to assess/review the six-monthly progress reports of Mr. Amit Kumar (Enrolment no.127723726) on the topic **“Geocological study in parts of Kangra region, Himachal Himalaya using Geoinformatics”** and Mr. Ankit Shah (Enrolment no. 131636648) on the topic **“Remote Sensing Based Depth Derivation of Shallow Inland Water Environment”** for the period July 2014 - December 2014. Both scholars presented their work during this period before the Doctoral Committee, which found their progress to be satisfactory.

Mr. Amit Kumar was advised to review the approach adopted for integrating RUSLE, DMA and LPA. Mr. Ankit Shah was advised to explore the site(s) for which old Hyperion data is available for field data collection.

The 12th Meeting of the Doctoral Committee in Geology was held on 15th January, 2015 to review the six-monthly progress report of Mr. Sarvesh Misra (Enrollment no.144500342) for the period July 2014-December 2014 on the topic **“Reconstruction of Palaeogeography and Palaeodepositional Environment of Siwalik Sediments around Ramnagar-Kaladungi area, Nainital, Uttarakhand”**. The Doctoral Committee found that the candidate’s progress needed improvement and advised him to carry out extensive field work with primary focus on the preparation of sedimentological lithologs.

SB 51.13.2 The School Board approved the minutes of the 11th and 12th Meetings of the Doctoral Committee for Geology held on 13th and 15th January, 2015, which are placed at **Annexures 16a and b**.

Item no. 14: To consider and approve the Phase Zero Form for the Pre-Ph.D. Courses of Ph.D. (Geology) programme.

SB 51.14.1 The School Board was informed that the Pre-Ph.D. Coursework for Ph.D. Programme in Geology was designed in the First Doctoral Committee meeting for Geology held on 24th Oct., 2011. Subsequently, the minutes of the First Doctoral Committee meeting and the syllabi of Pre-Ph.D. Coursework were placed for consideration and approval in the 44th School Board of School of Sciences held on 2nd and 30th March 2012. The School Board recommended that Phase III form should be filled for the approval of the syllabus for Pre-Ph.D. Coursework (item no. SB 44.34.1). The syllabi of various courses of Pre-Ph.D. Coursework for Ph.D. (Geology) programme, their transaction methods and evaluation methodology were approved in the 50th meeting of the School Board of the School of Sciences held on 29th September, 2014 under item SB 50.38.2. The approval of the School Board and the Academic Council was required for the Phase Zero form for the Pre-Ph.D. Courses of Ph.D. (Geology) programme. The Phase Zero form was being placed before the School Board of the School of Sciences for consideration and approval

SB 51.14.2 The School Board deliberated on the Phase Zero Form for the Pre-Ph.D. Courses of Ph.D. (Geology) programme and approved it. The Phase Zero Form approved by the School Board is placed at **Annexure 17 with Appendixes 1 to 3**.

Item no. 15: To consider and approve the Minutes of the Doctoral Committee of Life Sciences held on 3rd and 4th September, 2014.

SB 51.15.1 The School Board was informed that the meeting of the Doctoral Committee for Life Sciences was held on 3rd and 4th September, 2014 to review the mandatory work in progress seminars and progress reports of two Ph.D. scholars registered in Ph.D. (Life Sciences) Programme, namely, Shri Pushap Kant Rao and Ms. Baljinder Kaur Sandhu, to approve the synopsis and Ph.D. topic of four Category A students who have completed their pre-Ph.D. course work, namely, Shri Chetan Malik, Ms. Pooja Bhadoriya, Ms. Charu Gupta and Shri Mukul Jain, to approve the synopsis and Ph.D. topic of six Category B students who have completed their pre-Ph.D. course work, namely, Shri Rajranjan Tiwari, Ms. Deepmala Kaushik, Ms. Archana Kumari, Ms. Aarti Sharma, Ms. Neha Dhyani and Ms. Aisha Siddiqi, to review the progress of six scholars enrolled in the Ph.D. programme, namely, Ms. Emon Chatterjee, Ms. N. Mallika Mahesh, Ms. Padmashree Kulkarni, Shri Prem Parkash Chauhan and Shri Amanullah Khan.

The Minutes of the meeting (**Annexure 18**) were placed for the consideration of the School Board for its recommendations on whether an internal supervisor needs to be appointed for Ph.D. students of Prof. Pushplata Tripathi who has joined as Pro Vice Chancellor of IP University.

SB 51.15.2 The School Board considered and approved the Minutes of the meeting of the Doctoral Committee for Life Sciences held on 3rd and 4th September, 2014 with the following recommendation:

As per Clause 4.1 of the Ordinance on Research Degree Programme, where there are joint supervisors, one of the supervisors shall be from the University. The School Board was informed that other Faculty members in Life Sciences had expressed their inability to associate as internal supervisors with the Ph.D. students of Prof. Pushplata Tripathi as they did not have research experience in her area of specialisation but the Programme Coordinators were willing to provide administrative support to the students.

Considering the exceptional nature of the situation, the School Board recommended that the Vice Chancellor be apprised of the circumstances, and be requested to exercise his powers under Clause 15 of the Ordinance on the Research Degree Programme to permit the Programme Coordinators to provide administrative support to the PhD candidates concerned while the academic support should continue to be provided by Prof. P. Tripathi and the earlier approved joint external supervisor.

Item no. 16: To consider and approve the list of examiners for Ph.D. thesis of Mr. Ved Prakash, Ph.D. Scholar (Enrolment No.12772249) on the topic “Effect of Dust Charge Fluctuations on Excitation of Electrostatic and Electromagnetic Waves in Plasma” under the joint supervision of Prof. Vijayshri and Prof. S. C. Sharma

SB 51.16.1 For the sake of confidentiality, the list of examiners of the Ph.D. thesis of Mr. Ved Prakash, Ph.D. Scholar (Enrolment No.12772249) on the topic “Effect of Dust Charge Fluctuations on Excitation of Electrostatic and Electromagnetic Waves in Plasma” under the joint supervision of Prof. Vijayshri and Prof. S. C. Sharma was read out for the approval of the School Board.

The details of **Mr. Ved Prakash, Ph.D. Scholar (Enrolment No.12772249)** are as under:

1. Enrolment No.: **12772249**
2. Date of Registration: 20/07/2012 (July 2012 cycle)
3. Topic: **Effect of Dust Charge Fluctuations on Excitation of Electrostatic and Electromagnetic Waves in Plasma**
4. Supervisor(s):
Prof. Vijayshri, (Internal Supervisor), and
Prof. S. C. Sharma, (External Supervisor) Department of Physics, DTU, Delhi
5. Date of Pre-Ph.D. thesis submission seminar before Doctoral Committee:
18.11.2014
6. Number of Publication(s): **Five**

SB 51.16.2 The School Board approved the list of examiners and advised that the approved list of examiners should not be circulated as a part of the Minutes but be forwarded confidentially to the Research Unit.

Item no. 17: To consider and approve the list of examiners for the Ph.D. thesis of Shri Pushap Kant Rao, Ph.D. Scholar (Enrolment No. 122877887) on the topic “Studies on

Ethnobotany of District Kathua, J & K State” under the joint supervision of Prof. S.S. Hasan and Dr. Bachan Lal Bhellum

SB 51.17.1 The Board observed that the scholar had not published any paper. The internal supervisor also informed that the pre-Ph.D. thesis submission seminar of the scholar had not been held.

The details of **Shri Pushap Kant Rao, Ph.D. Scholar (Enrolment No.122877887)** placed before the Board were as under:

1. Enrolment No.: **122877887**
2. Date of Registration: **January 2012**
3. Topic: **Studies on Ethnobotany of District Kathua, J & K State.**
4. Supervisor(s):
Prof. S.S. Hasan, (Internal Supervisor), and
Dr. Bachan Lal Bhellum, (External Supervisor)
Department of Botany,
Govt. College for Women, Parade, Jammu, J &K
5. Date of Pre-Ph.D. thesis submission seminar before Doctoral Committee:
Yet to be fixed
6. Number of Publication(s): **Acceptance Awaited**

SB 51.17.2 The agenda item was withdrawn.

Item no. 18: To consider and approve the list of examiners for the Ph.D. thesis of Mr. Debdas Bhowmik, Ph.D. Scholar (Enrolment No.122877697) on the topic “Studies on Advanced Energetic Solid Propellants having Improved Strain Capability for Low Temperature Applications” under the joint supervision of Prof. B. S. Saraswat and Dr S. M. Pande.

SB 51.18.1 For the sake of confidentiality, the list of examiners of the Ph.D. thesis of Mr. Debdas Bhowmik, Ph.D. Scholar (Enrolment No.122877697) on the topic “Studies on Advanced Energetic Solid Propellants having Improved Strain Capability for Low Temperature Applications” under the joint supervision of Prof. B. S. Saraswat and Dr S. M. Pande, was read out for the approval of the School Board.

The details of **Mr. Debdas Bhowmik, Ph. D. Scholar (Enrolment No.122877697)** are as under:

1. Enrolment No.: **122877697**
2. Date of Registration: **13/10/2012 (July 2012 cycle)**
3. Topic: **Studies on Advanced Energetic Solid Propellants having Improved Strain Capability for Low Temperature Applications.**
4. Supervisor(s):
Prof. B.S. Saraswat, (Internal Supervisor), and
Dr. S.M. Pande, (External Supervisor)
Joint Director, HEMRL, DRDO, Ministry of Defence, Pune – 411021
5. Date of Pre-Ph.D. thesis submission seminar before Doctoral Committee:
7th January, 2015
6. Number of Publication(s): **Two**

SB 51.18.2 The School Board approved the list of examiners with one change proposed by the Supervisor, Prof. B. S. Saraswat. The Board advised that the approved list of examiners should not be circulated as a part of the Minutes but be forwarded confidentially to the Research Unit.

Item no. 19: Any other Items with the permission of the Chair

(i) **To consider and approve the names of external experts for conducting the Pre-Ph.D. Coursework of Ph.D. Geography Programme.**

SB 51.19.1(i) The School Board was informed that the Geography Discipline was planning to transact the Pre-Ph.D. Course Work through Extended Contact Programme. In this regard, the Discipline Group proposed to invite some senior external experts in the subject. While deliberating on the list of Experts placed before it, the School Board advised that the areas of specialisation be mentioned against each Expert's name and the affiliations of retired Experts be given. Moreover, the in-house faculty should conduct these classes and the participation of external experts should be only if the requisite expertise is not available in the University.

SB 51.19.2(i) Subject to the above decisions, the Board approved the names of the following External Experts for conducting the Pre-Ph.D. Coursework of Ph.D. Geography Programme:

List of External Experts for Pre-Ph.D. Coursework for the Ph.D. Geography Programme

S. No.	Name	Address	Area of Specialization	Contact: Phone/e-mail
1.	Prof. M.H. Qureshi	Shri A. M. Khwaja Chair Jamia Milia Islamia, New Delhi- 110025	Agricultural Geography, Economic Geography	9312637470 mhqureshi42@gmail.com
2.	Prof. B.S. Butola	Centre for the Study of Regional Development (CSR D), School of Social Sciences (SSS), Jawaharlal Nehru University, New Delhi-110067	Human Geography, Regional Geography	(011)26704468(O), (011) 26741515(R). bsbutola@mail.jnu.ac.i n butola.bs@gmail.com
3.	Prof. Sachidanand Sinha	Centre for the Study of Regional Development (CSR D), School of Social Sciences (SSS), Jawaharlal Nehru University, New Delhi-110067	Geographical Thought, Social Geography	26704568, 9868354019 sachisinha@mail.jnu.ac.in
4.	Prof. Harjit Singh	Centre for the Study of Regional Development (CSR D), School of Social Sciences (SSS), Jawaharlal Nehru University, New Delhi-110067	Physical Geography, Regional Geography and Environmental Geography	9811392343 harjit@mail.jnu.ac.in
5.	Prof. Aslam Mahmood (Retd.)	Centre for the Study of Regional Development (CSR D), School of Social Sciences (SSS), Jawaharlal Nehru University,	Quantitative Methods in Geography, Population	26704577, 9968292355 amahmood@mail.jnu.ac.in

		New Delhi-110067	Studies	
6.	Prof. H. Ramachandran (Retd.)	Department of Geography, Delhi School of Economics, University of Delhi, Res.: C-1675, Palam Vihar, Gurgaon, Haryana-122017	Economic Geography, Urban and Regional Geography	99810170308 hariharan_ramachandran@hotmail.com
7.	Prof. Amitabh Kundu (Retd.)	Centre for the Study of Regional Development (CSR D), School of Social Sciences (SSS), Jawaharlal Nehru University, New Delhi-110067	Urban and Regional Planning, Research Methods	9582854871 amit0304@mail.jnu.ac.in
8.	Prof. R. B. Singh	Department of Geography, Delhi School of Economics, University of Delhi, Delhi-110007	Environmental Geography, RS and GIS	9971950226, rbsgeo@hotmail.com

Item no. 19: Any other Items with the permission of the Chair

(ii) **To consider and approve the Editor for the course “Pattern Recognition and Image Processing (MMTE-003)” of the programme M Sc (MACS).**

SB 51.19.1(ii) The School Board was informed that the course “Pattern Recognition and Image Processing (MMTE-003)” is one of the elective courses of the programme M.Sc. (MACS). The name of **Dr. Brijesh Lall, Associate Professor, Dept. of Electrical Engineering, Indian Institute of Technology, Delhi** as the editor of the course was placed before the Standing Committee of the School Board of the School of Sciences in its 11th meeting for approval but was withdrawn due to lack of clarity as to why an Expert at Professor level was not being proposed to edit the course.

SB 51.19.2(ii) The Board was informed that this was a specialised course and Experts at Professor level had expressed their inability to edit the course in a time-bound manner due to prior engagements.

The CV of Dr. Brijesh Lall was also placed before the Board which noted that he had considerable teaching experience and substantial number of research publications to his credit. Keeping in view the vast experience and expertise of Dr. Brijesh Lall, the Board approved his name as Editor of the course “Pattern Recognition and Image Processing (MMTE-003)” of the programme M Sc (MACS).

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

(Vijayshri)
Director (SOS)

List of Annexures

- Annexure 1** Minutes of **50th meeting of the School Board of the School of Sciences**
- Annexure 2** Action Taken Report on the minutes of 50th meeting of the School Board of the School of Sciences
- Annexure 3** Minutes of the 11th Meeting of the Standing Committee of the School Board of the School of Sciences with Annexures
- Annexure 4a to f** Names of Moderation Board members for the Mathematics courses in Bachelor's Degree Programme, the Certificate Programme in Teaching of Primary School Mathematics (CTPM), Master's programme in Mathematics with Applications in Computer Science [M.Sc. (MACS)], the course OMT-101 of the Bachelor's Preparatory Programme, Ph.D. in Mathematics (PHDMT) and Ph.D. in Mathematics Education (PHDMTED).
- Annexure 5** List of evaluators for the Foundation Course in Science and Technology (FST-1)
- Annexure 6** Minutes of the Expert Committee meeting for PGDAST
- Annexure 7** Minutes of the meetings of Course Design and Development Committees for 3rd Level Geography Courses of B.Sc. Programme
- Annexure 8** Final syllabi and names of Editors approved by the School Board and names of Course Writers recommended by the School Board for 3rd Level Geography Courses of B.Sc. Programme.
- Annexure 9** **Phase zero form for the course Linear Algebra**
- Annexure 10** **Phase zero form for the AOC** Fresh Water Aquaculture placed before the School Board
- Annexure 11** **Phase zero form for the AOC** Coastal Aquaculture placed before the School Board
- Annexure 12** **Phase zero form for the AOC** Fresh Water Aquaculture approved by the School Board
- Annexure 13** **Phase zero form for the AOC** Coastal Aquaculture approved by the School Board
- Annexure 14** **Phase two form for M Sc Physics**
- Annexure 15** The concept note for the proposed AOC on GIS and the list of experts
- Annexure 16a and b** Minutes of the 11th and 12th Meetings of the Doctoral Committee for Geology held on 13th January, 2015 and 15th January, 2015

Annexure 17 **Phase Zero Form for the Pre-Ph.D. Courses of Ph.D. (Geology) programme**

Annexure 18 Minutes of the Doctoral Committee of Life Sciences held on 3rd and 4th
September, 2014