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UNIVERSITY OF DELHI SOUTH CAMPUS

FACULTY OF INTER- DISCIPLINARY AND APPLIED SCIENCES
UNIVERSITY OF DELHI SOUTH CAMPUS

A meeting of Faculty of Inter-Disciplinary and Applied Sciences (FIAS) was held on 29th May 2017 at 03:00 p.m. in Room No. 115, Arts Faculty Building, South Campus.

The following members were present:

1. Prof. P.K. Burma (Chairperson)
2. Dr. Arun Kumar Sharma
3. Dr. Surekha Katiyar Agarwal
4. Prof. Paramjit Khurana
5. Dr. Saurabh Raghuvanshi
6. Prof. Enakshi Sharma
7. Prof. Mridula Gupta
8. Dr. Kamlesh Patel
9. Prof. M.V. Rajam
10. Prof. B.K. Thelma
11. Prof. V.K. Chaudhary
12. Prof. P.C. Ghosh
13. Prof. Alo Nag
14. Dr. Garima Khare
15. Dr. Amita Gupta
16. Prof. Rani Gupta
17. Prof. J.S. Virdi
18. Prof. Swati Saha
19. Dr. Rajeev Kaul
20. Dr. Subhendu Ghosh
21. Dr. (Ms.) Manisha Goel
22. Dr. Sandeep Tiwari
23. Mrs. Manjeet Madan
24. Dr. Anshu Rastogi
25. Dr. Manoj Saxena
26. Dr. (Ms.) Manju Pruthi
27. Dr. Ravneet Kaur
28. Dr. Shashi Chawla
29. Dr. Ashima Vohra
30. Dr. Kusum Rani Gupta
31. Dr. Anita Sondhi

The following members expressed their inability to attend the meeting due to prior commitments:

1. Prof. J.P. Khurana
2. Prof. Anil Grover
3. Prof. Madan Mohan

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document with the necessary corrections. This could then be forwarded by the Chairperson for further approval of the University.

5. **Proposal to start an M.Phil. course in Biophysics:**

The proposal by Head, Department of Biophysics to initiate a programme in M.Phil (Biophysics) which was duly recommended by the Committee of Courses was considered. The Head briefed the members about the structure of the M.Phil (Biophysics) programme. The proposal offered four courses apart from a dissertation work. The members proposed that a uniform structure be followed with three theory papers and a dissertation work. The proposal was accepted in principle and the Head was advised to submit a revised proposal. This could then be forwarded by the Chairperson for further approval of the University.

6. **Reporting Items:**

The constitution of the Committee of Courses in Physical Education and Sports Science which was approved by the Dean, Faculty of Applied Sciences on 23rd March 2017 was placed before the faculty, which was approved.

All documents duly approved by the Committee of Courses in its meetings are to be forwarded to the University for necessary approval.

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

Prof. P.K. Burma
Chairperson

UNIVERSITY OF DELHI SOUTH CAMPUS
(DEPARTMENT OF MICROBIOLOGY)

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Date:25-01-2017

Minutes of M.Phil Committee Meeting

A meeting of the Committee for M.Phil Biotechnology was called on 13 January, 2017 in the Department of Microbiology to discuss the program and understand its relevance in light of the new PhD ordinance, which promotes the bilateral movement of students from M.Phil to PhD course and vice versa in the parent department.

M.Phil Biotechnology course was introduced in **1988** to be jointly administered by the departments of Biochemistry, Biophysics, Genetics and Microbiology. The program was designed as an inter-disciplinary course at a time when Biotechnology was an emerging area and there was a lot of interest amongst students to pursue such a course. Another purpose of the course was to enable students with 2-year B.Sc from outside Delhi University to be able to register for Ph.D in Delhi University after completing M.Sc from outside followed by M.Phil.

Over the years, a number of institutions came up that offered this or similar courses. Moreover, many research institutions such as IISER offered M.Sc-Ph.D integrated course directly after B.Sc while other institutes offered M.Phil students an opportunity to continue as PhD students. Due to these reasons, there was a steady decline in the popularity of this course. Over the past few years, it was felt that students took up this course only as a stand-by option. In many instances, even after enrolling in the course, many students left the course mid-way if a better opportunity came their way since there was no option of bilateral shifting from M.Phil to PhD due to lack of a parent Department. Last year, an All India entrance test was conducted for admission to M.Phil Biotechnology and five students were selected. However, only three students finally enrolled in the course.

These reasons prompted the M.Phil committee to re-look at the program. As a start, the committee members discussed the issue within their respective departments and collected the feedback of all faculty members. Subsequently, the Committee for M.Phil Biotechnology met in the Department of Microbiology on 13 January, 2017. The members discussed at length the pros and cons of this program. The members also raised concern over the vacancies remaining in the course due to non-availability of suitable candidates. Further, the lack of a parent department prevents the fulfillment of the new PhD ordinance.

The committee members unanimously decided that in interest of the students, the M.Phil Biotechnology program should be discontinued and it would be worthwhile that the associated departments can come up with their individual M.Phil programs. This will enable specialized teaching and vertical transfer of M.Phil students to parent Department for Ph.D as per requirement. At the same time, the inter-disciplinary nature of the course will not be affected since students will continue to have the freedom to select course work from any of the departments, as is currently the case in both MPhil and PhD programs. Further, the course work and entrance test is common for the two courses, which makes direct integration of M.Phil students into PhD program even easier.

Prof. Rani Gupta
(HOD Microbiology)
(Chairperson M.Phil. committee)

Prof. J.S. Virdi
(Member Microbiology)

Prof. Swati Saha
(Member Microbiology)

Prof. P.K. Burma (Dean, FIAS)
(HOD, Genetics & Biophysics)

Prof. Debi Sarkar
(HOD, Biochemistry)

Prof. V.K Chaudhary
(Member, Biochemistry)

Prof. Suman Kundu
(Member Biochemistry)

Dr. Amita Gupta
(Member, Biochemistry)

Dr. Rajeev Kaul
(Member, Microbiology)

Prof. M.V. Rajam
(Member, Genetics)

Prof. B.K. Thelma
(Member, Genetics)

Dr. Tanasya Srivastava
(Member, Genetics)

(Not attended)
Dr. Subhendu Ghosh
(Member, Biophysics)

Dr. Manisha Goel
(Member, Biophysics)

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Meeting of the Committee of Courses
Department of Genetics
University of Delhi South Campus

The members of the Committee of Courses of the Department of Genetics in its meeting held on 23rd May 2017, discussed the issue of introducing a course of Master of Philosophy (M. Phil.) in Genetics. The need to initiate such a program was felt in the light of the proposal to discontinue the M. Phil. program in Biotechnology, which was being offered jointly by the Departments of Biochemistry, Biophysics, Genetics and Microbiology under the Faculty of Interdisciplinary and Applied Sciences, UDSC. The M. Phil. in Biotechnology was an independent one academic year course. Being a terminal course, it was felt that M.Phil. in Biotechnology, does not give any advantage to the students for vertical movement into a Ph. D program proposed in the revised Ph. D ordinance. Further, there is a common entrance test and course work for a M. Phil./Ph. D program and students who pass the course work for M. Phil. can appear directly for interview for selection to Ph. D and are exempted from Ph. D course work.

In view of the above, faculty members of the department in a meeting held on 5th April 2017proposed that a M.Phil. in Genetics program be started. This they felt would enable specialized teaching and also allow for vertical movement of the students in the department. Subsequently, this may pave the way for an integrated M.Phil/Ph.D program in the department. Following these deliberations, the Committee of Courses recommended:

1. That a one year M. Phil. in Genetics program be initiated in the department.
2. M. Phil. in Genetics will run as per the ordinances and guidelines of the University.
3. The intake of the students will depend upon the available vacancies for a given academic year, which will be advertised.
4. The entrance to M. Phil. will be through an entrance test followed by an interview, which will be common with that for the Ph. D program in Genetics.
5. The course work of M. Phil. will be the same as that for Ph. D program. Currently, the department will offer the following papers (details of the course, Annexure I):
    i. Paper I (PGEN01): Advances in Genetics – I
    ii. Paper II (PGEN02): Advances in Genetics – II
    iii. Paper III (PGEN03): Research Methodology

    In addition to these courses the students can also opt for relevant Ph.D. courses offered by other departments.

23/5/17

Prof. Pradeep K Burma
Head

Prof. Alok Bhattacharya
JNU, External member

could not attend but gave his inputs & consent by email.

Prof. A. K. Singh
IARI, External member

23/5/2017

Proposal to initiate a programme in M. Phil - Genetics

Department of Genetics
University of Delhi South Campus
Faculty of Interdisciplinary and Applied sciences

- The Department of Genetics proposes to initiate a programme in M.Phil. (Genetics)
- M. Phil. in Genetics will run as per the ordinances and guidelines of the University.
- Some of the important points are as follows:

i. **Eligibility:**
The candidate should have a minimum of 55% marks (or equivalent CGPA score) in Master's Degree: Life or Biological Sciences (exemplified by but not restricted to Genetics, Microbiology, Botany, Zoology, Biomedical Research, Bioinformatics, Biochemistry, Biotechnology, Computational Biology etc.) /Physical/Chemical/Mathematical/Computational Sciences from a recognized University/Institute. There will be 5% relaxation for OBC/SC/ST and Persons with Disability.

ii. **Procedure of Admission:**
   a. The department will notify in advance, the number of vacant seats available in a given academic year.
   b. There will be an entrance test for M.Phil. which will be common to that of Ph.D. Programme. The written test will be a qualifying examination, which will be followed by an interview.

iii. **Course work and Dissertation:**
   a. The students will be required to complete three courses (total credit = 12) given below (**details in Annexure I**):
      1. PGEN01 - Advances in Genetics – I
      2. PGEN02 - Advances in Genetics – II
      3. PGEN03 - Research Methodology
   b. Each course will be of 100 marks, with 4 credits each.
   c. This will be followed by a dissertation of 300 marks (12 credits)

iv. **Duration:**
The M.Phil programme shall be for a minimum duration of one year from the date of registration and a maximum of two years.

विभागाध्यक्ष / Head
आनुवंशिकी विभाग / Department of Genetics
दिल्ली विश्वविद्यालय दक्षिण परिसर
University of Delhi South Campus
बेनिटो हुआरेज रोड / Benito Juarez Road
नई दिल्ली-110021 / New Delhi-110021

Annexure I

DEPARTMENT OF GENETICS
FACULTY OF INTERDISCIPINARY & APPLIED SCIENCES
UNIVERSITY OF DELHI SOUTH CAMPUS

Syllabus for M.Phil. course work

The department will offer the following three papers for M.Phil. course work

Paper I (PGEN01): Advances in Genetics – I
Paper II (PGEN02): Advances in Genetics –II
Paper III (PGEN03): Research Methodology

Dissertation

PGEN01 and **PGEN02** are aimed at introducing to the students the salient features of several model systems, highlighting their utility in genetics and genomics research. They will also be updated on the advances in both basic and applied aspects of contemporarily significant areas in genetics, genomics and biotechnology research across life sciences.

PGEN03 is aimed at teaching the essentials to fresh M.Phil. students to train them in the appropriate methods that they should inculcate early on in their scientific pursuit. It is proposed to teach this course in an interactive mode and taking in-house examples. It is projected to follow mainly a continuous evaluation mode for this paper based on assignments and presentations.

Dissertation: the student will carry out a dissertation on a subject approved by the Advisory committee under the supervision of the Supervisor appointed for the purpose. The dissertation may include results of the original research, a fresh interpretation of existing facts and data or may take such other forms as determined by the Advisory Committee.

The three theory papers are also open for students from other departments. The students of the department are also free to choose papers from M.Phil. or Ph.D Courses offered by other departments. A student has to pass all three papers including one on research methodology.

Evaluation: All three theory papers will have components of end semester examination and continuing evaluation. The total marks for each paper will be 100. A student has to score 50 marks to pass a paper. The distribution of marks will be as follows:

	Total marks (100)		
Paper	**End semester examination**	**Continuing Assessment**	**Credits**
PGEN01	70	30	4
PGEN02	70	30	4
PGEN03	50	50	4
Dissertation	300 marks (including Viva –Voce)		12

PGEN01: Advances in Genetics – I (4 Credits)

- **Revisiting concepts in genetics**: variations, segregation, independent assortment, gene interactions, linkage, recombination and genetic maps

  16 lectures

- ***Saccharomyces cerevisiae***: A hotbed for discovery of basic biological processes in eukaryotic cells; Metabolic switching and adaptation as a connection between yeast and cancer formation; A tool to study longevity; Discover platform for numerous genomic technologies, A model for studying pathogenic yeast

  12 lectures

- ***Dictyostelium discoideum***: Classical experiments; Genome organization; Starvation-induced development - morphogenesis, cell movement, chemotaxis, cell differentiation and pattern formation; Signaling molecules and its influence on cell differentiation; A model for various cellular processes and in understanding the shared pathological mechanism of disease (human neurodegenerative diseases and intracellular bacterial pathogens)

  12 lectures

- ***Drosophila melanogaster***: Tools for genetic analyses, studying developmental processes and cell signaling, disease modeling and analyses

  12 lectures

- **Microbial pathogenomics:** Genome organization of plant pathogens; genomic tools to understand evolution of pathogenesis in plant microbes; Evolution of virulence determinants- gene duplication, horizontal gene transfer and genome reduction

  12 lectures

PGEN02: Advances in Genetics – II (4 Credits)

- **Plant genetics and breeding:** Natural breeding systems; Concept of gene pool; Haploidy and polyploidy and their implications in breeding; Breeding methods; Genetic basis of heterosis and their exploitation in development of hybrid varieties; Molecular plant breeding - molecular markers in genome and gene mapping, QTL analysis, marker assisted breeding, map-based cloning of genes

  18 lectures

- **Biotechnological approaches for crop improvement**: Plant cell and tissue culture techniques and their applications in agriculture; Gene transfer in plants; Transgenic plants and genome editing for crop improvement; Biofortification; Biopharming; RNA silencing and its applications in plants

  18 lectures

- **Medical genomics**: Genetic variation (Chromosomal, SNPs, Indels, CNVs) in health and disease; Human Genome Project; Human Genome mapping methods - Physical mapping (Chromosomal banding through Next Generation sequencing) and Genetic mapping (Linkage analysis using RFLP/MS/SNP markers); Applications of mapping-linkage/association mapping for disease gene identification in monogenic and complex disorders; Diagnostic genetics, Genetic counseling; Functional genomics

  14 lectures

- **Cancer biology:** Genetic and epigenetic basis of cancer; Methods and models in cancer research; Updates on cancer therapy

  14 lectures

PGEN03: Research Methodology (4 Credits)

- **Identifying a broad research area:** Basic versus applied; Narrowing down to a sub-area

  2 lectures

- **Relevant scientific literature search:** Importance and methods (including choice of key words); Learning to distinguish between original work, repetitive work and validation study

  2 lectures

- **Framing a research question:** Identification of lacunae in the research area of interest; Hypothesis generation; Defining the aims/objectives; Revising objectives at a later date

  2 lectures

- **Designing a realistic research strategy including alternate strategy;** Study design, Importance of - inclusion of negative and positive experimental controls, biological and technical replicates, single and double blind studies, coding/anonymisation of samples, statistics based sample size determination prior to finalization of study design

  6 lectures

- **Recording observations:** Importance; Methods of transparent and systematic record keeping; Maintenance of laboratory work books – hard and soft copies; Storage of data including taking regular backups

  4 lectures

- **Organization and analysis of observational/experimental data:** Hypothesis testing, hypothesis generation, unbiased analysis, importance of looking beyond the obvious, serendipitous findings, independent cross-validation of data; Interpretation of data

  6 lectures

- **Presentation of data:** Raw and analyzed data; Methods- Graphic, pictorial, tabular, oral, poster

  16 lectures

- **Scientific writing**: Abstract, synopsis, concept note, full length research proposal, research paper, research thesis; Importance and styles of citing references

  16 lectures

- **Safety in research:** Handling of biohazardous substances, disposal of biohazardous waste; Biosafety issues- Chemical, radiation, recombinant DNA, biological material

  2 lectures

- **Research ethics:** Honesty, acknowledgement of contributions, authorship issues, plagiarism, fraud

  2 lectures

- **Regulatory bodies in research:** Institutional ethics committee, Institutional biosafety committee, Animal ethics committee

  2 lectures

- **Debatable issues in applied research:** Genetically modified foods; Ethical, legal and social issues in biomedical research

  2 lectures

- **IPR issues in research** 2 lectures