**Minutes of the Board of Studies Meeting (by email circulation)**

**Department of Energy and Environment**

**TERI School of Advanced Studies**

26 June 2020

**Board of Studies experts:**

Prof. Jayant Kumar Tripathi, Prof. Meeta Mehra, Mr. Amit Kumar

**DEE members of Board of Studies**

1. Dr Kamna Sachdeva (Chair HOD)
2. Prof. Shaleen Singhal
3. Prof. Prateek Sharma
4. Prof Atul Kumar
5. Dr Naqui Anwer
6. Dr Chubamenla Jamir
7. Dr Bhawna Bali
8. Dr Sapan Thapar

**Agenda:**

**Review of PhD program outline of department of energy and environment**

The PhD program outline was developed by the department was sent for review; the four eminent experts reviewed the outline (list of reviewers given in the attached outline). All the respective comments received by the experts has been incorporated and final version was sent to BoS members (internal and external experts) via email circulation for further strengthening the outline, comments and ATR as follows:

Dr Shaleen Singhal: Well-structured outline.

'The Supervisor will schedule the research proposal defence activity'. This point may be elaborated and rephrased reflecting that it is a formal assessment done by a panel and has specific requirements etc.

ATR: the suggested point elaborated in the revised outline

Mr. Amit Kumar: The draft outline is fine. '*Develop skills in scientific writing, oral presentation and publishing the results of their research in journals of repute, maintaining high ethical standards in research and academia*' would be at an output or an outcome?

ATR: the word output is replaced with outcome in the revised outline. The language of the text is also revised to make it more gender neutral in expression.

Dr Naqui Anwer: suggestion related to date of registrations and DRC approval of courses was given
ATR: All the contentions point was resolved and checked as per the university guidelines.

Dr Jayant K Tripathi
He finds outline is well structure, some language related editing was suggested.

ATR: all the suggestions accepted and incorporated

Prof. Atul Kumar
He is in agreement with the proposed outlined structure

Dr Chubamenla Jamir
Clarity on credit requirement for part time and full-time registered students was asked
ATR: credit requirement will be based on existing PhD guidelines of university

Dr Bhawna Bali

1. Programme USP: This has to specific to PhD programme @ DEE.
2. Upon successful completion of PhD, the scholar must play an active role in national community. In fact, action research would lead to many contributing to local communities.
3. Learning Outcomes: usage of word 'critical philosophy' in LO is perhaps misplaced since an important aspect while developing research acumen is teaching philosophy (of which critical philosophy is a part). Research Methodology courses for PhD programmes usually have a component on philosophy of science and/or social sciences.

ATR: All the suggested comments has been discussed and relevant are accepted and incorporated

*Comments from Prof. Mehra and Prof. Prateek has not been received.*

……The final approved outline is attached……

## Ph.D. Programme Outline of Department of Energy and Environment

### Programme Overview

Department of Energy and Environment (DEE) at TERI School of Advanced Studies (TERI SAS) provides a competent and vibrant environment to PhD students for achieving academic excellence of highest global standards and the opportunity to nurture an independent, analytical and critical thinking. The mode of operation and key features of the doctoral programme are governed by the provisions as laid down in '***TERI School of Advanced Studies Ph.D. Regulations-2019***". While the emphasis is laid down on interdisciplinary approaches, disciplinary thrust is maintained with focus on a range of themes such as energy, urban development, climate science and environment resources.

### Programme USP

The PhD programme at DEE is designed to strengthen both core and applied knowledge base as well as build research acumen in the field of energy, urban development, climate science and environment resources among scholars through intensive course work spanning between one and two semesters. It inculcates interdisciplinarity in research and develops innovative skills among outstanding research-oriented learners. PhD scholars are provided opportunities to augment their research skills through involvement in faculty-led research projects as well as explore nuances of teaching post-graduate students through teaching assistantship (particularly in laboratory work). At the culmination of the degree, scholars are fully prepared for autonomous research and scholarship at the vanguard in their chosen fields of energy, urban development, climate science and environment resources as well as have acquired competencies to pursue teaching. The PhD programme promotes impactful and cutting-edge interdisciplinary research demonstrating with opportunities for broader research excellence framework to enable scholars to play an active role in national and international communities.

### Programme Outcomes

After the completion, Ph.D. students should be able to:

- Develop an understanding of research, philosophy and domain knowledge for addressing current research problems and identifying emergent themes in the area of specialization.
- Critically apply concepts, methods, and learning to address underlying queries in their discipline of research as well as imbibe the spirit of inquiry and solution-oriented ideas.
- Engage in the research of impact in the fundamental discipline or an interdisciplinary research.
- Understand and apply scientific methods, tools, and techniques to carry out high quality research work.

- To have intellectual independence, creative scholarship and ingenuity in tackling and solving research problems.
- Cultivate and demonstrate skills in articulating their research outputs in scientific writing, oral presentation and publishing the results of their research in conferences and journals of repute, maintaining high ethical standards in research and academia.
- Demonstrate their skills and knowledge at conceptualizing, planning and executing research independently and/or in team that extends the existing horizons of interdisciplinary research/thematic

**Programmes Structure**

PhD Programme is divided into three stages. These are:

**Stage I: Ph.D. Course work**

The PhD course work at TERI SAS is designed to develop rigorous research and analytical skills among the students and enable them with necessary research analytical and methodological skill sets. The Ph.D. Course work is governed by the 'TERI School of Advanced Studies Ph.D. Regulations-2019'.

***Ph.D. Course work structure and requirement***

The credit assigned to the Ph.D. course work shall be a minimum of 8 credits and a maximum of 16 credits. The course requirement will be prescribed by the Departmental Research Committee (DRC) on the recommendations of the Students Research Committee (SRC). The Ph.D. course work must be completed within the first two semesters from the date of registration.

Every Ph.D. student must take the following mandatory courses.

a) Research Methodology – 3 Credits (Credit only course)
b) Research and Publication Ethics - 2 Credits (Credit or audit course)
c) Quantitative Research Method – minimum 3 Credits from the list of the applicable quantitative methods courses.

Apart from the above, Ph.D. students can take 'Communication Skills' as non-mandatory course. Other advanced level courses from the list of courses offered for Master's Programmes may also be prescribed by SRC after considering the student's background in relation to the proposed topic of research.

The list of available courses in DEE under Quantitative Methods category are

- Environmental Statistics (4 credits)
- Multivariate Data Analysis (3 credits)

- Optimization techniques for energy management and planning (3 credits)
- Applied Numerical Methods (3 credits)
- Stochastic Modelling (4 credits)
- Spatiotemporal Data Analysis (3 credits)

**Stage II: Research proposal defense and research work**

- A student will be permitted to appear for defending the research proposal only after he/she has completed the Ph.D. course work as prescribed by the SRC.
- As a part of the research proposal defense, a draft research proposal must be prepared by the student in consultation with the Supervisor(s) and duly approved by SRC members.
- The Supervisor will schedule the research proposal defense activity before a panel comprising of SRC members and an external expert if supervisor has requested so.
- After the satisfactory defense, the student will be required to submit his/her final research proposal and related documents to the DRC with due approval from the Supervisor. The final research proposal must be submitted to the DRC within a period of 24 months from the date of registration in the Ph.D. programme.
- During Ph.D. programme, the student shall appear before the SRC at least once in each semester to make a presentation of the progress of his/her work. This process will continue until the thesis submission.

**Stage III: Thesis submission**

- Ph.D. scholars may submit his/her thesis at any time if he/ has completed the minimum period of registration and complied with all the necessary requirements as specified in "***TERI School of Advanced Studies Ph.D. Regulations-2019***" (and subsequent amendments). Prior to the thesis submission, the scholar shall make a presentation in the Department before the DRC. A Ph.D. student must submit his/her thesis within the stipulated period, failing which his/her registration will be considered null and void.

**Additional Information**

The detailed information can be found in TERI School of Advanced Studies PhD Regulations - 2019.

**Course Reviewer's**

1. Prof. Bishwajit Bhattacharjee.
   Civil Engineering Department, Indian Institute of Technology, Delhi

2. Prof. AL Ramanathan,
   School of Environmental Sciences, Jawaharlal Nehru University

3. Prof. Atiqur Rehman,
   Faculty of Natural Sciences, Jamia Millia Islamia

4. Prof. A K Keshari
   Civil Engineering Department, Indian Institute of Technology, Delhi