



Undergraduate Teachers Enrichment (UGTE) Programmes

The UGTE programmes are meant for all interested undergraduate faculty across India. Our idea is to form a large mathematics discussion group dealing with aspects of undergraduate mathematics, in the colleges affiliated to universities. This would include statistics, operational research and computer science departments and Engineering colleges as well. In fact, Mathematics includes all areas of pure, applicable, and engineering mathematics

Many of these faculty are isolated. At many places infra-structural facilities are poor. The difficulties become severe in non-metropolitan areas. Working conditions, for example, heavy teaching loads, stringent leave rules, lack of peer contact, lack of contact with the PG-faculty, lack of computer facilities, pressure to publish, often make it difficult to foster proper appreciation of higher mathematics. We shall try to overcome these problems by developing proper net-working.

The UGTE programmes will be largely interactive. An old stanza in Sanskrit describes the process of learning as "1/4th from a teacher's teaching, 1/4th from one's own efforts, 1/4th from discussion with the like-minded people, and 1/4th from sleeping over the material for a long time". The programmes will follow the second and third steps in this process.

For the UGTE-programmes, there is some funding available in RMS. In addition to that, the National Centre of Mathematics (NCM), which is a joint activity of TIFR and IIT (Bombay), and based at IIT (Bombay), has provided Rs. 20 lakhs to start the activity. Eventually, based on the response, RMS hopes to apply for support from the national funding agencies like DST or NBHM, or other corporate and individual sources.

The UGTE Programmes are still in a "pilot mode". Committee members will encourage undergraduate faculty to organise UGTE workshops in their institutions and render all possible guidance and help. The undergraduate teachers are expected to approach a committee member from their region.

Goals of UGTE Programmes

UGTE programmes have been designed with following goals in mind.

- To deepen the understanding of the fundamentals of the subjects, which the undergraduate teachers teach.
- To provide the logical (deductive as well as inductive) structure of mathematics, explaining the role of 2-valued logic, set theory, and category theory. In particular, to clarify that many mathematical entities are expressed using numbers, but they themselves are not numbers.
- To provide a broad view of mathematics through an interdisciplinary perspective.
- To provide a semi-historical view of mathematics, mainly covering development of mathematical ideas, but also covering a few things about the lives of eminent mathematicians, to indicate the social conditions under which they worked.
- To prepare the undergraduate teachers to spot and nurture talent amongst undergraduate students and to well channelise their potentials.

Structure of the UGTE Programmes

A tentative structure of UGTE programmes has the following parameters and gives the organisers a large amount of flexibility in planning the activity.

- The duration for a UG-Faculty Programme / workshop will be usually from one day to one week. However, longer programmes and other modes will also be considered.
- Suggested schedule is of six contact hours, divided into three to six lectures / interactive sessions each day.
- The programme will have a set theme, which has to be studied in depth. A set of sample themes with topics (of different time durations) is given in the Appendix. The concerned committee member and expert resource persons can work out further details including books / online material etc. to be used for the programme.
- Expert resource persons will be suggested and requested by the concerned committee member to kindly lend their expertise and devote their time for this important activity.
- The participants are expected to be coming from a particular region.
- Preferably, the participants will be from younger age-group. But what counts is their sincerity and aptitude for learning and active participation. A statement from each one of them about their interest in a specific workshop may be sought.
- Because the programmes are regional, the costs are expected to be low. The cost may vary from region to region as well. Roughly speaking, for a programme with 30 participants, the total cost for a week-long programme is estimated to be around Rs.1.2 lakhs.
- RMS may give a grant for this purpose or recommend the case to NCM.
- The organising institution is expected to contribute towards expenses in addition to providing the venue with all facilities free of cost.

- An appropriate Registration fee may be charged from the participants.
- The organising institution will take the full responsibility on all financial matters.
- Each participant will be asked to fill a Feedback proforma giving views and suggestions towards the end of the programme.

Procedure for UGTE Programme

Essential steps of a preliminary procedure are as follows.

- Step 1: A detailed proposal for an RMS-UGTE programme will be prepared by the organising institution, in consultation with the concerned committee member, as outlined above well in time, preferably two months before the event is planned for. This will include the proposed theme, proposed resource persons, proposed academic programme, a draft of the poster of the programme, estimated budget specifying expected expenditure, expected contribution by the institution, suggested registration fee, facilities available at the institution etc.. It will be sent to the President, RMS, and the Chairman of the RMS Regional Programmes Committee. He can consult Committee members and other RMS authorities etc., suggest changes, if any and approve or disapprove the proposal.
- Step 2: If the proposal is approved, the organising institution will send the information to the resource persons and to the concerned institutions from where participants are likely to come well in time. The institution will send the posters and seek preliminary registration (without any payment or otherwise) from participants, select the participants, inform them and ask them to make payments, if any, for the formal registration. For procedural convenience, a waiting list may be prepared as well.
- Step 3: The organising institution takes the responsibility of making all arrangements for the programme including the local travel, hospitality and payment of honorarium and national travel, if any for the resource persons.
- Step 4: After the completion of the programme, the organising institution will send to the President of the RMS, Chairman of the RMS Regional Programmes Committee, a report of the activity together with a few photographs of the event, accounts and a summary of the feedback proformas. Copies will also be sent to the Secretary and Treasurer of the RMS and the concerned committee member. All the proformas will be sent, under a separate cover, to the Secretary of the RMS. All this will become property of RMS to be used solely for academic purposes under full confidentiality.