



NUTECH TECHNOLOGY RESEARCH GROUPS
POLICY (NTRGP)

NATIONAL UNIVERSITY OF TECHNOLOGY (NUTECH)
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Introduction

1. The concept of academic technology research groups (TRGs) in the top-ranking universities around the world is quite old and mature now. The leading technology universities owe their ranking and fame to the quality-based consistent research generated by their departmental technology research groups. In view of these facts, vision and statutory requirements there shall be mandatory requirement of strong technology research groups (TRG) on priority basis at NUTECH. All the TRGs shall be led /co-led by the expert PhD faculty members at all the departments of the respective Institutes/Schools/Labs and any other academic components of the University. The respective Institutes/Schools/departments shall ensure the following:

- a. Creation of the technology research groups (TRGs) based on the expertise of the available faculty in each department.
- b. Specific technology related separate and functional departmental TRGs in the given period of maximum six months from the date of commencement of maiden Undergraduate academic programs at NUTECH.
- c. Encouragement and facilitation of all the Bachelor, MS and PhD students to do technology based research as the active members of a TRG of their choice.
- d. An active supervision, guidance and ownership of the TRG(s) by the PhD faculty members in all the departments.
- e. An active patronage of the TRGs by the respective Principals/Deans/Directors R&D/HODs through close performance monitoring of the respective groups on regular basis.
- f. Generation of internationally publishable industrial problems and solutions based quality academic and applied research by the members of the respective TRGs on regular basis.
- g. Display of all the relevant information about the composition, research achievements, strengths and capabilities etc, of respective TRGs on the web-pages of the respective departments at the NUTECH website.

- h. Development of new technology based industrial/commercial products and patents through continuous research of the TRGs in an organized manner.
- i. An active inter-group (multi-disciplinary) academic and research collaboration at NUTECH level.
- j. Creation of new avenues for an active technology based collaboration and interaction between the various departmental TRGs and industry at the national and international levels.

2. All the respective Institutes/Schools/departments/Labs shall take all necessary steps in the light of the policy guidelines for the establishment and promotion of genuine technology driven industrial applied research culture and the generation of top quality research for the long-term benefits of the University, Industry and Society.

3. **Aim and Scope.** The policy provides the necessary binding guide lines to the respective Institutes/Schools/departments/Labs and other academic components for an effective creation, organization, progression, promotion and advancement of based quality technology research at the post-doctoral, doctoral, master and undergraduate levels at NUTECH.

4. **Ingredients of the Policy Guidelines**

The policy guide lines on the subject shall cover the following aspects:

- a. Criteria for the creation of a TRG.
- b. Composition of the TRGs.
- c. Procedure of the initial working of TRGs.
- d. Suggested activities of a TRG.
- e. Responsibilities of the TRG members.
- f. Responsibilities of TRG Chairman & Coordinator.
- g. Responsibilities of HODs towards the TRGs.
- h. Role/Contribution of respective Principles /Deans /Directors R&D.

5. **Criteria for the Creation of a TRG.** The suggested criteria is as under:

- a. Each permanent PhD faculty member shall identify and suggest at least one specific problem area related to his field of specialization.
- b. Every suggested problem area must require PhD level research and has the scope of culminating into some technology driven academic and applied

innovation to facilitate a new industrial/commercial development and improved industrial product design in the future.

- c. The faculty members are at liberty to propose more than one technology driven and industry based problem areas keeping in view their academic commitments and ability to handle associated TRGs effectively.
- d. One PhD student shall do research thesis in a particular suggested problem area/ sub-problem area under the supervision of the same PhD faculty member who suggested it initially.
- e. On assigning a particular problem to a PhD student a TRG will come into existence. The PhD student will become the team leader of that TRG. In some cases more than one PhD students can have same responsibility in a TRG.

6. **Suggested Composition of TRG.** TRGs shall be created on permanent basis and have a broad base to include PhD, MS/MPhil and undergraduate students of the 4-year Bachelor degree program. Initially, with the commencement of Bachelor of Engineering (Technology) programs in the respective Schools/departments at NUTECH the respective TRGs shall be created by senior departmental PhD faculty members, assisted by junior PhD faculty and MS Lecturers nominated as TRG coordinators, accordingly. During the fall semester term the freshmen shall be guided by the departmental PhD faculty members through frequent departmental level interactions / lectures / seminars etc. All freshmen shall be encouraged to join any of the respective departmental TRGs by the end of fall semester term but before the commencement of end-term semester exams. Any number of small sub-groups of undergraduate students shall be made members in a particular TRG as deemed appropriate by the senior PhD faculty member as Chairman in terms of scope and assignment of possible technology based industry-specific project tasks in the Technology Communities, UTPOP, UTLP, UTROP programs in 4-year degree and IAP, Summer session terms in each year. With the commencement of master and PhD programs the composition of respective TRGs shall be enhanced by adding master and PhD students and bring all groups to have broad academic base as per best international group based research practices. In that case the following composition of a typical

departmental TRG is suggested but subject to change as per the discretion of TRG Chairman:-

a.	One Expert/Experienced PhD Faculty Member	Group Chairman (May have Vice Chairmen, if required)
b.	One PhD/MS/MPhil Faculty Member	Group Coordinator/Research Associate
c.	One PhD Student (May Vary)	Team Leader of TRG (May have Vice Leaders)
d.	4-6 MS Students (May Vary)	Senior Members & Project Group Leaders
e.	4-6 BE (T) Community/UTPOP/UTROP members/groups (Where applicable)	Associate Members of Research Group (2-3 Students in One Project Group inside a TRG)

7. **Procedure of the Initial Working of TRGs.** The following general procedure shall be adopted to create/activate the broad based departmental TRGs for their initial function and operation:

- a. On joining the PhD program a PhD student shall be given an initial two months of orientation of the departmental labs and facilities, interaction with the PhD faculty and the research groups already working in his department of study.
- b. After two months he will give a presentation to the senior faculty members in the departmental meeting regarding his plans of working with a PhD faculty member on a particular problem area. In the presentation he would cover the following aspects:
 - (1) Plan to create a TRG (after the consent of his PhD supervisor)
 - (2) Identification of 4-6 (may be less or more) sub-problem areas associated with his work to be offered to the prospective MS and BE(T) students as the members of the TRG.
 - (3) Identification of the experimental apparatus, test rigs, benches and other instrumentation needed for his PhD research.
 - (4) Identification of the TRG projects based on the development of the identified experimental facilities for the prospective associate members of the group (necessary intellectual support of PhD faculty, coordinator, Chairman will be available).
 - (5) Anticipated time-lines for the organization of the research activities and the execution of research work in the TRG.

- c. After the presentation by the PhD student the HOD will designate a PhD/MS/MPhil faculty member to become the research associate/Coordinator of the TRG.
- d. After the presentation and approval of the plan of the TRG by the departmental faculty, the group Chairman will approve a particular name of the TRG and the 4-6 sub-problem areas (may vary) for the MS technology research.
- e. After the presentation, in consultation with the Chairman of the TRG the HOD will announce the Guidance and Evaluation Committee (GEC) for that TRG comprising members from department, University and industry on need basis.
- f. The minutes of the departmental meeting shall be forwarded to the Dean/Principal/Director in one week after the approval of the formation of the TRG, as well as to the academic advisors of all the student members of that TRG.
- g. All finances/budget requirements for the TRG will be the responsibility of the group Chairman/ HoD/GEC.
- h. All MS/MPhil BE(T) students of a particular batch will spend their first academic semester in getting the orientation of all the departmental research activities by maintaining a close interaction with all the departmental TRGs.
- i. All MS/MPhil/BE(T) students shall be bound to join a particular TRG of their choice in the first two weeks of the second academic semester.
- j. The TRG Chairman will accept the MS/MPhil/BE(T) students in his TRG after assessing them in terms of aptitude and level of knowledge related to the problem.
- k. The TRG Chairman will send the list of the MS/MPhil/BE(T) students of his group to the HOD in the second week of the second academic semester.
- l. After joining the research group every MS/MPhil student shall seek guidance through academic adviser from the group Chairman and the team

leader before deciding to study the elective subjects offered in the MS/MPhil/BE(T) program.

- m. The TRG Chairman shall encourage the group members to study the offered elective subjects that have the direct bearing on their technology research thesis/ projects related to industry.
- n. All the MS/MPhil/BE(T) students shall be discouraged to work independently and in isolation on a single topic without joining a TRG, as a matter of policy.
- o. In case an MS/MPhil/BE(T) student insists on doing research/ project without joining a TRG then the HOD shall ask him to give a presentation on the academic and research significance of the topic in the departmental/relevant Committee meeting.
- p. In the departmental meeting the senior faculty will look into the prospects of expanding the research/project topic suggested by the MS/BE(T) student for the PhD level technology research in the near future. If the possibility exists then a new TRG on the same problem area shall be approved in the meeting.
- q. The HOD and the Chairman of the proposed TRG as suggested by the MS/MPhil/BE(T) student and approved by the faculty shall look for a PhD student(s) to join that group as the team leader. It will allow the formal creation of that TRG.
- r. All the Under-graduate students in the initial two weeks of their first semester shall have their orientation sessions with the existing departmental TRGs.
- s. All the TRG coordinators shall prepare the lists of their respective group projects/research thesis after the necessary approval by their Chairmen and offer them to the prospective undergraduate students in the first week of the second semester of an under-graduate course in the department.
- t. The HOD will formally approve the creation of the project groups of 4-5 under-graduate (Number of students may vary) students each in every TRG after the necessary consent of the respective group Chairmen.

- u. The respective technology project group members (Undergraduates) shall formally join their assigned TRGs before the third week of their second semester.
- v. The TRG Chairman will nominate every senior member (MS/MPhil student) as the project group leader of a particular undergraduate project/research within the group.
- w. The HOD will ensure that all the necessary information and relevant details about a particular approved TRG are duly placed on the departmental web page, which shall be up-dated in the first week of every month on regular basis. It will preferably cover the following information:
 - (1) Name of the TRG and the date of its creation
 - (2) Composition of the TRG
 - (3) Details of the Chairman, Coordinator and the Guidance & Evaluation committee members.
 - (4) Proposed Areas of PhD/ MS and UTROP research.
 - (5) Proposed Undergraduate projects (UTPOP, Committees Technology Leaderships etc).
 - (6) Details of the group achievements and updates in terms of:
 - (a) Research publications/in TRG product/ process improvement in Industry etc.
 - (b) TRG Projects completed and their details.
 - (c) Patents produced.
 - (d) Research Sponsorships/Industry Linkage.
 - (7) Details of research collaboration with the other TRGs at NUTECH Institutes/Schools/Departments/Labs/ any other entities and other universities (if any).

8. **Suggested Activities of TRG.** All the research work and projects related activities of the different members of a TRG shall have the following important aspects duly incorporated to optimize their research work output:-

- a. Establishment of a strong Knowledge-Base of all the members of a TRG through the regular three weekly interactive education sessions, the

fortnightly Group Research Seminar(s) (GRS) and monthly Combined Research Groups Seminar(s) (CRGS). The time and venues of weekly sessions shall be set by TRG coordinators as per the discretion of their respective group Chairmen.

- b. A comprehensive literature review by all the members of a TRG to develop a clear understanding of the latest international research applicable to their respective research fields/areas/topics.
- c. The continuous process/mechanism of knowledge sharing, an exchange of innovative ideas and the finalization of most appropriate approach to culminate in the formulation of an effective TRG research plan by all the group members.
- d. Objective-oriented, task-specific and domain based consistent technology research involving problem formulations and logical models development based on standard international practices by every TRG member.
- e. The development of standard experimental test benches, rigs, test equipment, instrumentation and the associated data acquisition systems by the undergraduate members based respective project groups in a TRG.
- f. The group members will make conscious efforts to get patents rights duly approved by the competent agencies for their newly developed experimental apparatus as part of the group based technology research.
- g. The group-based research experimentation and results validation on the test benches developed by the Undergraduate Student Project-sub-groups in the TRG.
- h. Simulations, Analysis, parametric studies and optimization based on the basis of existing research methodologies and techniques.
- i. Compilation of technology research findings and results followed by discussion sessions in the respective GRSs and CRGSs in the respective departments.
- j. Generation of quality research by all the members of a TRG individually and collectively.

- k. Individual member/TRG based research publications in the proceedings of the top quality indexed research conferences of the leading research societies in USA and West European countries on regular basis.
- l. Individual member/Group based research publications in the prestigious ISI-Indexed high impact factored journals.
- m. Organization of at least one TRG symposium/conference/seminar every six months at the Institutes/Schools/ departments level and every year at NUTECH level for the presentation of new technology research generated by the members of the respective TRGs.
- n. Blogs on the NUTECH website will be created by the respective TRGs including web based tools through NUSIT to generate healthy discussion/debate between the various TRGs on the challenges/issues of academic/applied research.

9. **Responsibilities of TRG Members**

The members of a TRG will imply the team leader, senior members and the undergraduate members. Their responsibilities are suggested/discussed below.

10. **Responsibilities of Team Leader (PhD Student)**. The team leader shall be responsible for the overall cohesion and routine research activities of all the members of his TRG. His suggested responsibilities are:

- a. The team leader shall involve all members of his TRG in the academic literature survey/review of already published technology research related to the assigned problem area(s).
- b. Shall arrange/organize interactive education sessions of minimum 1-2 hours duration for all the members of his TRG at least three times in any day and time in a week to improve their academic knowledge base for research / projects.
- c. He shall guide / educate the TRG members about the fundamental, applied and advanced concepts related to his problem/research area and their respective areas in the interactive sessions.

- d. Shall undertake an extensive PhD research involving the logical progression of work with simultaneous knowledge-sharing with the other members of the TRG through GRSs and CRGSs.
- e. Shall present the models developed, simulations generated, analytical results, numerical solutions, experimental findings in the GRSs and CRGSs on regular basis.
- f. Will get intellectual guidance from the TRG Chairman on weekly basis for establishing the credibility of own research generated and that produced by the other members in the group.
- g. He will arrange and utilize the departmental facilities for the various research activities of his TRG including the interactive education sessions, GRSs, CRGSs, research review meetings etc. of his group. He will do it with the help of TRG coordinator.
- h. He will ensure the attendance of all the members of his TRG in the interactive group education sessions through the respective student advisors and TRG Coordinator and will give the attendance reports to the group coordinator on regular basis.
- i. He will discuss the various dimensions of his research/ problem area with the TRG Chairman (Supervisor) for the proper identification of 4-6 (may vary) sub/associated areas requiring MS/MPhil/Undergraduate level research by the members in the group.
- j. To facilitate his PhD research, MS technology research, and UTROP research of the members of his group he will suggest the development of the necessary test benches, rigs, measurement devices and instrumentation to the Chairman of the TRG.
- k. He will get all the essential projects approved from his Chairman through his research associate/coordinator of TRG from the suggested list of the test benches/rigs/equipment for their onward assignment as projects to the associate Undergraduate members.

- l. After the necessary discussion he will assist the Chairman and the Coordinator in deciding the research topics of all the MS/MPhil/Undergraduate, members of his TRG.
- m. He will assist the group coordinator in organizing the Group Research Seminars (GRS) on fortnightly basis and the Combined Research Groups Seminars (CRGS) on monthly basis.
- n. He will give a presentation in every GRS and CRGS to cover the following aspects:
 - (1) Summary of his research activities/work done in the previous two/four weeks.
 - (2) Summary of academic/knowledge-based guidance provided to the other group members in the interactive sessions of previous two/four weeks.
 - (3) Outline plan of the research work of the TRG in the succeeding two/four weeks.
 - (4) Outline of the academic topics for the interactive education sessions in the succeeding two/four weeks.
- o. He will organize and manage all the academic research activities of all the members and their academic/research project activities in a cohesive and comprehensive manner.
- p. He will educate all the TRG members about the writing of the literature review reports, group research reports, conference and journal research papers.
- q. He will oversee the working of every UTROP, UTLP, UTPOP, Technology Community project group working under every MS/MPhil member student of his TRG on regular basis and facilitate the timely execution of the projects through continuous guidance.

11. **Responsibilities of Member (MS Student).** To generate the top quality technology research in a TRG it is essential to have maximum contribution from all MS/MPhil group members for achieving the tangible results. The proposed composition of 4-6 members (may vary) is meant for the MS/MPhil students of a

single MS degree Program. It implies that 4-6 (may vary) MS students from every MS degree course will be offered to join a group for their MS/MPhil research thesis. It also implies that the team leader will be managing a variable strength of the MS/M Phil members during his tenure of PhD research. The proposed composition of MS/M Phil members is subject to change and will primarily depend on the various dimensions and research challenges identified by the TRG Chairman after an exhaustive literature review effort by all the members of the research TRG. After joining a particular group the responsibilities of a MS/MPhil member are:

- a. An active involvement and participation in the interactive education sessions in the TRG on regular basis.
- b. Study the elective graduate courses in MS/MPhil which have the direct relevance with the various aspects of the prevailing technology research challenges in the TRG.
- c. Be an active participant and speaker in every GRS and CRGS.
- d. Conduct a comprehensive literature review of the latest research under the guidance of the team leader and share the acquired knowledge with the other group members on regular basis.
- e. Shall finalize a specific technology research problem for his MS/MPhil thesis within six months of joining a TRG. The problem for MS/MPhil thesis work should have a direct relevance with the primary research area of the team leader.
- f. Shall undertake an extensive research involving the logical progression of work with simultaneous knowledge-sharing with the other members of the group through GRSs and CRGSs.
- g. Shall present the models developed, simulations generated, analytical results, numerical solutions, experimental findings in the GRSs and CRGSs on regular basis.
- h. Will get intellectual guidance from the TRG Chairman, team leader and the research associate for establishing the credibility of the research generated.
- i. Shall act as supervisory team member of UTPOP, leader of UTROP Projects Group of 2-3 BE (T) students working as part of the TRG.

- j. Shall arrange the interactive education sessions for undergraduate project group members exclusively whenever and wherever required.
- k. Shall provide an active guidance and support to undergraduate project group members in developing the assigned test rigs/software/data acquisition system.
- l. Shall organize undergraduate projects progress seminar of all group members on fortnightly basis as part of the GRS.
- m. Will act as a vital communication link between all members, Chairman, research associate and the team leader in the TRG.

12. **Responsibilities of Undergraduate Members BE (T) Members.** The undergraduate members will be part of a TRG in the form of the Technology Communities, UTPOP, UTLP, UTROP based project groups. Each project group may have a composition of 4-5 (may vary) members. The TRG Chairman will be the supervisor of all the undergraduate projects associated with the research group. Undergraduate members/groups of MS may be of the size as the students in a TRG may conveniently handle/manage. An MS student will act as a team leader of a undergraduate group/ project group. The status of the undergraduate students in the TRG is attributed to the fact that they are not really expected to do top quality innovative technology research but are part of the TRG for strengthening their technology driven academic knowledge-base, intellectual grooming and an exposure to the technology research environment. The suggested responsibilities of the undergraduate members are the following:

- a. Shall be part of all the interactive education sessions, GRSs and CRGSs in the group.
- b. Shall maintain close interaction with the designated undergraduate project team leader, research associate, TRG team leader and the group Chairman.
- c. Shall prepare an introductory project feasibility report based on the initial guidance of the Project Supervisor (Group Chairman), Project Coordinator (Research Associate/ Group Coordinator) and the project group leader and advisor in the fourth week of each semester term of related undergraduate research program.

- d. Present the project plan of own project group in the GRSs.
- e. Maintain close liaison with the TRG coordinator for the availability of resources for the execution of the undergraduate project related to industry.
- f. Virtual and physical models development by each undergraduate project group prior to the actual design and fabrication of the project equipment/bench/apparatus etc.
- g. Approval of the virtual and physical models from the team leader, project supervisor and the group chairman after the presentations in the GRSs.
- h. Physical design and fabrication of the technology base industry project by putting in the collective intellectual and physical efforts of the project group.
- i. Design analysis and project testing before the PhD/MS/MPhil team leader TRG team leader and the research associate/group coordinator for the initial approval.
- j. Project demonstration before all the members of the TRG and its final approval by the Chairman of TRG as project supervisor.

13. **Responsibilities of TRG Chairman.** A PhD faculty member will identify and suggest a problem area related to his/her field of expertise for the PhD level Technology based research. The suggested problem should have the scope of creating a TRG to find a comprehensive solution by a group of at least 4-6 MS/MPhil students (may vary) led by a PhD student(s). After a TRG is created he will act as the Chairman of the group in an effective manner apart from being the thesis and project supervisor of all the members. In this context the following responsibilities are suggested:

- a. He will accept the MS M Phil/Undergraduate students for research in the TRG after assessing their aptitude, seriousness and level of knowledge.
- b. He will identify the sub-problem areas for the intending MS/Undergraduate members to undertake technology based industry focused research after their acceptance in the TRG.
- c. He will identify the fundamental and advanced topics that are needed to be mastered by all the senior members to strengthen their knowledge-base

before undertaking the technology based research work/project in the assigned problem areas.

- d. He will ensure that the team leader (PhD student) organizes and conducts the interactive education sessions of minimum 2-3 hours for all the members in the TRG for at least three times on any time in a day/evening in a week.
- e. He will preside over the Group Research Seminars (GRS) on fortnightly basis.
- f. He will attend the Combined Research Group Seminars (CRGS) on regular basis.
- g. He will write the interim performance reports of all the members of his TRG on quarterly basis. He will submit it to his HOD through the department's research coordinator for onward submission to the related undergraduate and graduate academic research performance committees for discussion in their meetings.
- h. He will write his report on the basis of the performance of the group members in the GRSs and departmental CRGSs.
- i. He shall preside over the guidance and evaluation committee (GEC) meetings on quarterly basis for the guidance and evaluation of the research group members by the committee.
- j. He shall be accessible to all the members of the TRG for the necessary direction and guidance at least 1-2 times in a week.
- k. He will perform a regular review of the technology research of his TRG and forward a review report on six monthly basis to the Dean of research at NUTECH.
- l. He will highlight the details of the research generated by the TRG in the form of publications in the international conferences of repute and ISI Indexed Journals.
- m. He will interact with the Chairmen of the other TRGs in his department as well as those in the other departments, Institutes, Schools, Labs of NUTECH for the possible inter-group/composite research collaboration.

- n. He shall explore all avenues/sources of research funding for his TRG from the public and private sector national industrial enterprises, public sector R&D setups, multi-national companies, regional and international industry.
- o. As Chairman he shall vigorously promote the concept of Academic-Industry relationship through practical implementation of 'Academic Engagement' as per best international practices.

14. **Responsibilities of Research Associate/Group Coordinator.** A MS/MPhil/PhD faculty member shall act as the research associate/coordinator of the TRG. He will have a permanent and an important place in the smooth functioning of a TRG. In this context he will have the following responsibilities:

- a. He shall assist and provide a regular up-date to the TRG Chairman of all the activities of the group.
- b. He shall ensure that the proposed interactive education sessions of the TRG are conducted on regular basis at least three times in a week. He shall make necessary coordination in advance accordingly for all the weekly sessions.
- c. He will organize and conduct the fortnightly GRSs on regular basis and be part of the organizing committee of the departmental CRGSs.
- d. He will write a brief report/summary of the GRSs and departmental CRGSs and submit the same to the HOD after its approval by the Chairman of the TRG.
- e. He shall establish TRG close liaison with the departmental/lab/industrial liaison offices (ILO) for possible funded/non funded industrial projects for his TRG.
- f. He shall work in close coordination with the team leader for all research based activities of the TRG members and shall maintain a log of record of TRG activities.
- g. He will take a personal interest in all the undergraduate projects of the TRG. He will guide and arrange guidance for the undergraduate projects and take a regular progress report of the activities of the undergraduate

member regarding their technology committees, UTPOP, UTLP, and UTROP projects.

- h. He will make all necessary coordination required for the smooth execution of the undergraduate projects. It will include liaison with the concerned Lab director/In-charges/Supervisors of own and other departments for sorting out the different issues like labs accessibility, availability of services, workshop facilities etc.
- i. He will undertake all the administrative work for the issue and disbursement of funds required for the respective TRG projects and research thesis of the team leader and MS/MPhil members.
- j. He shall assist Chairman in preparing research review reports of the TRG.

15. **Responsibilities of HOD and Departmental Coordinator**. The HOD and the departmental research coordinator in a department are expected to facilitate the smooth functioning of the TRGs. In that context following is suggested:

- a. The departmental coordinator will maintain the record of all the TRGs in a department.
- b. The departmental coordinator shall facilitate and oversee the organization of the fortnightly GRSs in the department by the respective TRG coordinators and the team leaders.
- c. The HOD and departmental coordinator will ensure the smooth organization and conduct of the departmental CRGS on monthly basis.
- d. The departmental coordinator shall make the appropriate places available to all the departmental TRGs for the smooth conduct of the interactive education sessions for at least three days a week.
- e. The HOD will facilitate and strengthen the inter-departmental TRG collaboration and act as a strong link between the Chairmen of the various TRGs.
- f. Shall ensure the maintenance of the TRGs web-pages and an up-to-date information of all of their technology driven research activities. He shall effectively engage NUSIT for all IT based support to all TRGs of his department.

- g. The HOD will organize national technology conference/symposium once in a year by involving all TRGs and academic entities at NUTECH.
- h. The HOD will organize an international technology research conference on biennial basis based on the research outputs of the various departmental and university TRGs. The research produced by the various TRGs in the two years prior to the conference shall be presented in such conferences by following the best international practices.

16. **Role of Dean/Principal/NURAD.** The role of the respective Deans/Principals/NURAD Office is vital in an effective implementation of the policy guidelines to firmly establish and promote the concept of group-based academic research in technology. The respective Deans/Associate Deans/Principals/ NURAD Office etc., at NUTECH shall provide maximum facilitation to the respective HODs of the different departments for organizing university level national technology conference(s)/symposium(a) on yearly basis and international Technology Research conference(s) on biennial basis. To transform NUTECH into one of the leading technology driven applied research based international universities it shall be very important for the Dean of the university to devise a comprehensive mechanism for the creation, nurturing and grooming of the TRGs on permanent basis in their respective Schools/Institutes/departments/ technology labs/other academic components of NUTECH. Through consistent efforts by all the PhD and Master students shall be converted into the real assets of NUTECH like the top ranking technology based research universities in the world. All the respective Deans/Principals/HoDs shall strive hard for the creation and firm establishment of technology research groups (TRG), keep the Dean of the University updated on regular intervals and promote technology research culture as the 'Way of Life' at NUTECH.