RESEARCH AND DEVELOPMENT MANUAL

(R&D Manual)

Dr. D. Y. Patil School of Engineering Lohegaon, Pune-412105

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RESEARCH AND DEVELOPMENT

R&D MANUAL

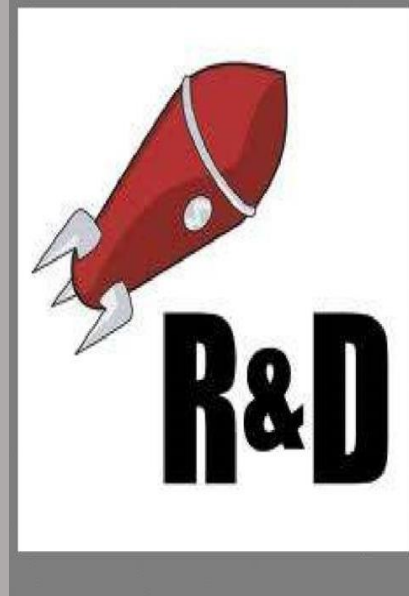|	
Edited by, **Dr. S. M. Khairnar** **Dean (R&D)**	
Reviewed & Recommended by, **Dr. M. Z. Shaikh** **Principal**	**R&D**
Approved by **Hon. Dr. Ajeenkya D. Y. Patil** **Chairman**	

D Y PATIL GROUP

Dr. D. Y. Patil Group of Institutions

Dr. D. Y. Patil School of Engineering Lohegaon, Pune-412105

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1. Introduction

Teaching and Research are the main functions assigned to any institute. Teaching is a prime function and needs to be performed at the highest level of competence; that is possible only when the faculty is involved in the research activity.

Research is an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison, experiment, collection of facts or data, analyzing the facts to reach certain conclusions either in the form of solution(s) towards the concerned problem or in certain generalizations for some theoretical formulation. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research.
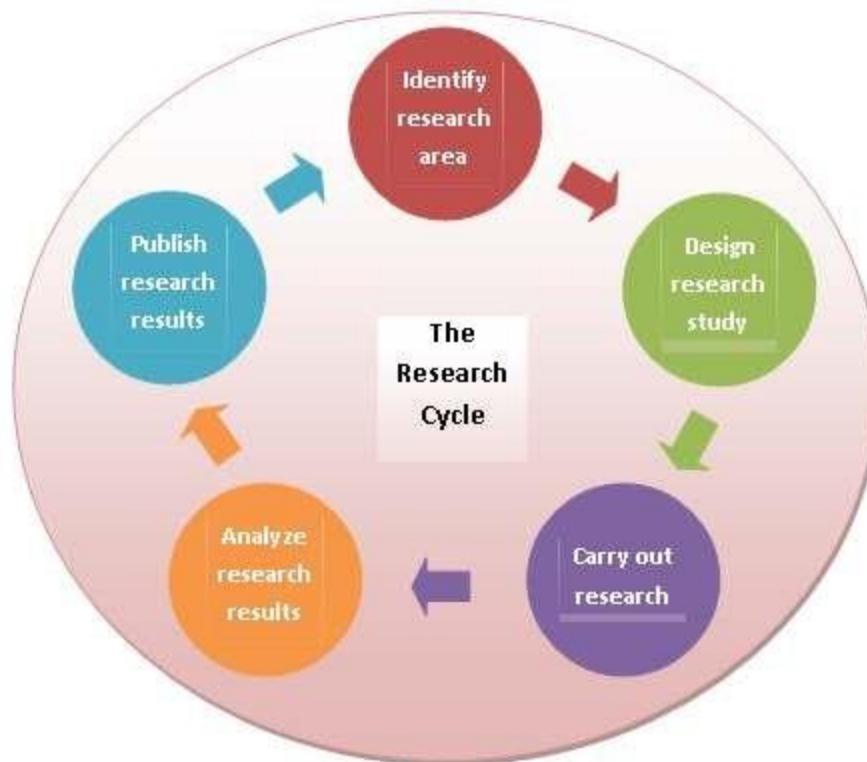
Research essentially nourishes the academic program and such engagement helps teachers to remain at the cutting edge, with advances in their own subject. It also sustains the interest in academic activities and widens the scope of learning. Importantly, it helps the institute to stand at the global level.

2. R&D Cell

The R&D cell comprises of faculty members from various departments in the institute. This committee oversees the smooth and efficient coordination of research and development activities in the institute, thus fostering overall growth.

A senior faculty heads this cell in the capacity of Dean (R&D), ably supported by HsOD; with the Principal providing advisory support. The faculty members that constitute the R&D Cell are,

1	Dr. M. Z. Shaikh	Principal
2	Dr. S. M. Khairnar	Dean (R & D)
3	Col. Sanjay Karodpati	Head (Civil Engg.)
4	Dr. S. M. Koli	Head (E&TC Engg.)
5	Mr. Rohit Garad	Head (Mechanical Engg.)
6	Dr. Pankaj Agarkar	Head (Computer Engg.)
7	Mr.R. C. Katdare	Faculty (Civil Engg.)
8	Dr.Sunil Rathod	Faculty (Computer Engg.)
9	Mr.Nishikant Surwade	Faculty (E&TC Engg.)
10	Dr Imran Ansari	Faculty (Mechanical Engg)
11	Mr Yogesh Dhongade	Faculty (Engg Sciences)

The role of each of the members can be summarized as,

- To encourage and motivate faculty for externally funded research and development, interdisciplinary and multidisciplinary research, product design and development, publications in journals of high standing.

- To facilitate discussions and collaborations with researchers from other institutes, with the possibility of joint work in various thrust areas of national and international importance.

- To initiate and promote MoU with industries and R&D organizations; for consultancy, collaborative research, sponsored projects, industry institute interactions etc.

- To arrange talks and interactions by eminent personalities from industry, R&D organizations and institutions of repute; for the better understanding of research methodology and practices currently followed.

- To support faculty for delivering talks at different events and conducting workshops, training programs, seminars, conferences, symposiums, faculty development programs.

- To visit R&D organizations and disseminate information regarding the effective implementation of research projects vis-a-vis the institute.

- To suggest peer reviewed national and international journals for subscription in central library as well as department library.

- To formulate the R&D budget of department in close co-operation with the faculty and the Head.

- To keep everyone abreast of all announcements by various funding agencies like DST, DAE, DRDO, ISRO, CSIR, AICTE, UGC, SPPU, and the like.

- To motivate students for presenting papers in National and International conferences, and projects in competitions and exhibitions. B.E. projects can be considered as a mini research project. Interdepartmental / collaborative work to be encouraged positively.

- To convert good innovative ideas of BE / ME projects in to Publications / Patents.

3. Aims and Objectives

The institute believes in a judicious combination of teaching and research for the benefit of student community at large. The institute envisages innovation and technological development through its R&D axis. It has plans to cultivate academic and research collaborations with national and international universities, governments and industries to meet the immediate needs of society and industry. The institute also remains committed to long-term research as the foundation for future development.

The institute's serene atmosphere, infrastructure that keeps abreast of global standards and excellent academic facilities coupled with intellectual freedom; richly add to the perfect ambience for conducting cutting-edge research that can make a positive change in the lives of the citizens.

Aims

- To inculcate the spirit and culture of research amongst all the stakeholders.
- To enhance interaction and cooperation between researchers for interdisciplinary and multidisciplinary work.
- To forge academic and research collaborations with national and international universities, governments and industries.
- To establish links with various R&D organizations and funding agencies for sponsored and contract research.
- To work towards development of DYP-SOE as a National R&D / Incubation Center.

Objectives

- To enhance the research awareness by organizing national and international conferences, symposia, workshops on research methodology, IPR and patents, talks and discussions with eminent researchers.
- To motivate faculty for doctoral and post doctoral assignments at various national and international universities and organizations of repute.

- To encourage faculty to undertake research projects in, thrust areas in science and engineering funded by various national and international agencies.
- To explore new horizons of knowledge and ensure its practical implementation through collective efforts and quality research work.
- To provide a creative atmosphere, complemented by adequate facilities and resources in which research thrives amongst the faculty and students.

4. R&D Activities

The major R&D activities are as follows:
- External Funded Projects
- Publications in peer-reviewed Journals
- Faculty Development Programs, Conferences, Workshops, STTPs, Symposia etc. (attend and organize)
- Procurement of high-end computational and laboratory equipment's, and software for Research
- Deputation for Higher Studies
- Talks and Lectures by eminent researchers
- Industry Institute Interaction (Students and Faculty)
- Collaboration and MoU with Industry and R&D Organization

Note: The concession so granted shall be reimbursed on submitting the certificate of participation. All the participants shall initially pay the full registration fee and claim for reimbursement only after fruitful completion of the program.

5. Patents

Receiving patent of one's research work is one of the most important and influential factor to judge the quality of research. The legal assistance shall be provided to those who are interested in registering the patent. Full financial assistance shall be given on granting the patent in the name of institute. The patent shall irrevocably be registered in the name of DYP-SOE with the researcher's name prominently featuring as the inventor. The commercial aspects shall be mutually worked out between the institute and the researcher.

6. Publications

- Research and in-depth review papers shall be submitted to peer-reviewed journals for possible publication.

- Publication charges (if any) of the research papers published by faculty, shall not be reimbursed by the institute.

- Paper in refereed journal would be augmented as follows: (i) paper with impact factor less than 1 - by 5 points; (ii) papers with impact factor between 1 and 2 by 10 points; (iii) papers with impact factor between 2 and 5 by 15 points; (iv) papers with impact factor between 5 and 10 by 20 points: (v) papers with impact factor above 10 by 25 points. The API for joint publications/books shall be calculated in the following manner:

- Total score for the relevant category of publication by the concerned teacher, the First and Principal / corresponding author /supervisor / mentor of the teacher would share equally 70% of the total points and the remaining 30% would be shared equally by all other authors.

7. Conferences and Workshops

The funds available to the candidate/applicant to participate at conferences, workshops, STTPs, etc. shall be as tabulated below,

Sl. No.	Type	Financial Assistance
1.	International Conference (Abroad)	up to Rs. 25,000
2.	International Conference (India)	up to Rs. 10,000
3.	National Conference, Symposia, Workshop, STTP, etc	up to Rs. 3000

Note : The requisite amount within the limits mentioned shall be sanctioned by the Head of Institution, on recommendations of the respective Head of department and review by Dean (R&D). This amount may be claimed from the department R&D budget sanctioned for the said financial year for the conferences / workshops etc. organized by reputed institution like IIT's, NIT's, IIM's….etc.

8. Funded Projects

The depth of R&D culture, in any institution is judged by the number of grants approved and funds generated via various projects. A large number of new research projects are initiated every year with funding from various national and international governmental organizations and industries. The R&D cell keeps the faculty, abreast of all such announcements for R&D projects and encourages them to submit proposals for funding.

A select few national and international funding agencies are,

- Aeronautical Development Agency (ADA)
- Aeronautical Research & Development Board (ARDB)
- All India Council for Technical Education (AICTE)
- Council of Scientific & Industrial Research (CSIR)
- Department of Atomic Energy (DAE)
- Department of Biotechnology (DBT)
- Defence Research & Development Organization (DRDO)
- Department of Science & Technology (DST)
- Indian Space Research Organization (ISRO)
- Institution of Engineers (India) (IE)
- Ministry of Agriculture and HRD
- Ministry of Communications and Information Technology
- Ministry of Non-Conventional Energy Sources
- University Grants Commission (UGC)
- University of Pune (BCUD-UoP)
- National Science Fund, U. S. (NSF)
- Industry - IBM, TCS, Infosys, TATA Motors, Honeywell, etc.

In addition to research projects, Government grants are received under the following schemes:
- Funds for Improvement of Science and Technology Infrastructure (FIST)
- Fast Track Scheme for Young Scientists
- Swarnajayanti Award Projects
- Career Award for Young Teachers
- Better Opportunities for Young Scientists in Chosen Areas of Science and Technology (BOYSCAST)
- Modernization and Removal of Obsolescence (MODROBS)
- Thrust Area Program in Technical Education (TATE)
- Women Scientists Scheme
- Young Scientists Research Award
- TEQIP

Important Guidelines

All the faculty members who intend to apply for R&D projects and grants, and all those who have obtained approval for their projects from various apex bodies, industries and universities shall follow the work procedure given herewith.

- Every research proposal shall pass through a multi-tier review, where the proposal shall first be reviewed by the PI/ Co-PI themselves, then by the concerned Head/ experts in the department,

followed by other eminent researchers in the field. The proposal shall then be vetted by the departmental review committee (DRC) before submission to the funding agency.

- It is advisable to have a faculty working in the same field, as Co-Investigator; for every proposal submitted for funding to external agencies. The faculty proposed as Co-Investigator, shall preferably be from the same department as the Principal Investigator.

- All applications related with R&D shall be routed through the Dean (R&D) along with one hard copy for R&D records. A soft copy shall also be emailed to the Dean (R&D); and the department representative in R&D cell as well as the HOD shall be copied on the email.

- Separate dead stock registers can be maintained for all R&D as well as externally funded projects in every department.

- Purchase of instruments, software, etc. and the audit report made for the same shall follow the Finance Officer guidelines.

- Principal Investigator and Co-Investigator shall ensure that the instruments, software, etc. purchased are secured in the laboratory/ department.

- The entire sanctioned amount shall be utilized as per the guidelines of the funding agency.

- In case the Principal Investigator leaves the institute; all the items, instruments, software, etc. purchased shall remain as an asset of the institute (except a few projects of DST).

- All HsOD must regularly and diligently update the R&D information on the institute website.

9. Policy for Procurement and Maintenance

- The purchase committee for any research project shall comprise of, The Principal, Registrar, Dean (R&D), concerned HoD and PI/ Co-PI. Their role is to streamline the purchase requests and gauge its utility; in completion of the project. The said committee shall also look into the recruitment of JRF/ SRF, if any.

- The accounts department shall submit a photocopy of, the sanctioned letter and cheque/ DD to the concerned Principal Investigator (PI) of the research project.

- The P.I. shall immediately plan and apply in writing to the Principal, through Dean (R&D) for releasing the funds (towards, travel, contingency, consumables, books, technical assistance, hiring charges, etc. i.e. excluding the equipment cost and salary, if any). The Accounts Department shall immediately release the amount on receiving the sanction from the Principal. The PI shall settle the accounts, for the released amount on or before 31st of January every year.

- The PI shall also plan for purchase of equipments as per the existing purchase procedure of the institute. A minimum of two quotations are necessary for the equipments to be purchased. The only exception to this shall be proprietary items, where the PI has to submit a justification. The entire purchase of equipments for the research project shall be completed, positively by 28th February of every year.

- It is advisable; though not mandatory to procure high end equipments from reputed manufacturers with a proven track record.

- All the sanctioned funds shall be spent as per the guidelines of the concerned funding agency.

- All the equipments purchased, shall first be registered in the Stores and then in the DSR of the R&D in the department. This will help to have a uniform procedure and smooth functioning of purchase procedure under R&D. The total expenditure under R&D can then be easily identified.

- Incase PI leaves the institute, the Co-PI shall be fully responsible to complete the project as per the guidelines of the concerned apex bodies.

- If the PI is not in a position to continue the project, the PI shall utilize all the funds received as on date and submit the utilization certificate and progress report to the R&D Cell. He shall only then be relieved from his duties.

- The PI/ Co PI shall complete the project by all means within the stipulated period and submit the audited statement of expenditure, utilization certificate and progress report to the concerned funding agency. A copy of all such documents shall also be marked to Dean (R&D) for records.

10. Seed Money

Seed money for R&D project shall be distributed by the following procedure:

- Submission of proposal/s to funding agency

- Application for seed money through the respective HOD

- Scrutiny by R&D cell on sanction of the submitted project

- 25 % of the sanctioned project cost shall be given as seed money from the department R&D budget

11. Departmental Review Committee (DRC)

This committee (DRC) is formulated to specifically oversee the research proposals by faculty and UG and Post Graduate dissertations. The DRC shall comprise of,

- Head of Department (concerned Dept.)

- Research Coordinator (concerned Dept.)

- P. G. Coordinator (only in case of M. E. Projects)

- Project Guide & Co-Guide

- Subject Expert/s (May be from same institute / other)

All the prospective Principal Investigators should ensure that the research proposal is presented before the DRC well in advance prior to the submission. The HoD should ensure that the project work of PG students is presented before the DRC at least 30 days prior to the submission.

It may kindly be noted that, the research proposal of faculty shall be submitted to the funding agency only after presentation to DRC. Similarly, the project work of every PG student shall be submitted to the university, only after the approval by DRC.

In addition to this, the DRC shall also look into,

- Collaboration with research organizations
- MoU with industries and overseas universities
- Training and Consultancy
- Continuing Education (including Add on Modules)
- Industry Sponsored Projects

12. R&D Incentives

The institute follows a unique point based incentive scheme to reward the research work carried out by faculty in the respective year. This is a one of its kind scheme initiated with the patronage of our Executive Director and serves as an effective motivation for faculty, to undertake research in their chosen areas of interest. The various points considered for R&D incentives are tabulated below,

• CATEGORY – 1				
Sr. No.	Type	Details & Scale	Points	
1.	R&D and External Funded Projects	i. 20 to 25 lakhs	50	25
		ii. 10 to 20 lakhs	40	20
		iii. 5 to 10 lakhs	25	15
		iv. 1 to 5 lakhs	15	10
		v. Up to Rs. 1 lakh	10	05

		• The points mentioned are for PI and Co-PI. In case of multiple CoPIs, the points shall be divided equally amongst all Co-PIs. • All such projects that receive funding and grants from apex bodies, government or non-government funding agency, R&D organizations, industry, university, etc. are eligible to be considered. • The points for external funded projects shall be based on the actual amount received, and not on the amount sanctioned. • Outstanding performance in the form of funds received in the excess of Rs. 25 lakhs, will be directly awarded 5% of the amount received, on submission of progress report/s.		
2.	Publications	i. Refereed Journals	15	10
		ii. Conference Proceedings as full papers (Abstracts not to be considered) With ISBN/ ISSN No.	10	05

		• Publications in journals, with an ISSN No., approved by UGC/AICTE shall only be considered. • The institute's name "Dr. D.Y.Patil School of Engineering Lohegaon Pune" should appear in the affiliation of the author/s; for consideration of incentive points. • Only one co-author shall be considered for credit to be given towards publication points. • Incase of multiple authors weightage will be given as per UGC/AICTE norms. • The score for paper in refereed journal shall be augmented as follows; • Impact factor less than 1 : 10 and 05 points • Impact factor between 1 and 2 : 15 and 10 points • Impact factor between 2 and 5 : 20 and 15 points • Impact factor between 5 and 10 : 25 and 20 points
3.	Paper Presentation	i. International Conference 05
		ii. National Conference 03

4.	Student Publications (Max: 15 points)	i. Journals/ Conference Proceedings (Abstracts not to be considered)	5 / publication
	• All those publications with DYP-SOE student/s as author/s and faculty in the capacity of project guide as co-author shall only be considered. • All other points mentioned for Point No. 2 (Publications) are valid for this criterion as well.		
5.	Books and Chapters in Books (other than refereed journal articles)	i. International Publishers	50/ sole author 15/ chapter in an edited book
		ii. National level publishers/ State and Central Govt. Publications	25/ sole author; 10/ chapter in an edited book
	• In case of multiple authors, equal weightage to all the authors. • Publications with an ISBN No. shall only be considered. • The institute's name "DYP SOE Lohegaon" should appear in the affiliation of the author/s; for consideration of incentive points.		
6.	Patent	i. Overseas	100
		ii. Indian	50
	• The points shall be equally distributed amongst all; if the number of people registering the patent is more than '1'. • The patent shall irrevocably be registered in the name of "DYP SOE Lohegaon" with the researcher's name prominently featuring as the inventor. The commercial aspects shall be mutually worked out between the institute and the researcher on a case-to-case basis.		
• CATEGORY – 2			
Sr. No.	Type	Details & Scale	Points
7.	Industrial Training (Max: 15 points)	i. 2 to 4 weeks duration	15
		ii. Two weeks duration	10

	• The industrial training shall be undertaken for a minimum period of 2 weeks in the vacation period or non-instructional days. • The said training should be in an organization with minimum Pvt. Ltd. structure. • Under no circumstances, should the training be arranged in the regular academic schedule.			
8.	Courses/ Programs Attended (Max: 10 points)	i. International	10	
		ii. National/ State/ University	05	
	• Technology Programs, STTPs, FDPs, Workshops, etc are included. • The program attended should be for a minimum period of 1 week. • The courses attended during instructional days shall not be considered for incentive points. • The same shall be attended only during summer and winter vacation or non-instructional days.			
9.	Courses/ Programs Organized for Faculty (Max: 10 points)	i. International	10	
		ii. National/ State/ University	05	
	• Refresher Courses, Training Courses, Conferences, Seminars, Workshops, STTPs, FDPs, etc are included. • The points for organizing conferences, workshops, STTPs, etc. shall be claimed only by the Convener/ Coordinator of the event. • For all such events that are funded by some agency, the points shall be increased to 20 and 10 respectively. The funding in this case has to cover minimum 70% of the total expenses for consideration of additional points.			
10.	Research Guidance	Ph. D.	20	10
		M. Phil / MS / M.Tech by Research	5	---
	• The points shall be awarded only on award of degree by the university. • The research student should contribute to the institution in the form of lecture, seminar, etc.			
11.	Innovative Product Development		50	
	• The product designed should be a commercially viable one, and have had received acceptance from the industry with national/ international recognition.			

<u>IMPORTANT NOTE</u>

THE FACULTY MEMBER HAS TO CONTRIBUTE FROM
(MINIMUM) 1 CRITERION IN CATEGORY 1 AND 1 CRITERION IN CATEGORY 2
TO BE ELIGIBLE FOR R&D INCENTIVE

Incentive Criteria

The points to be considered for recommending R&D incentives are tabulated herewith;

R&D Incentive	Points ≥ for		
	Assistant Prof.	Associate Prof.	Professor
1	50	100	100
2	100	200	200
3	150	300	300
4	200	400	400

Note : The period of consideration shall be from 1st July to 30th June

All such faculty eligible for R&D incentives shall submit the report with supporting documents to the HoD, through the Research Coordinator of the department by 20th of June every year. The HoD along with some senior faculty members shall then carry out a rigorous scrutiny at the department level; and ensure that their recommendations reach the R&D cell, latest by 25th of June, every year.

Mode of Execution

The R&D Incentive scheme shall follow a transparent, multi-tier process with the following authorities;

Evaluating Authority : Head of Department

Reviewing Authority : Dean (R&D)

Recommending Authority : The Principal

Approving Authority : Director / Secretary

R&D Budget

The HsOD shall formulate the yearly R&D budget, in close co-operation with the senior faculty members in the department. The same shall be forwarded to, The Director.

The HsOD shall ensure the inclusion of, appropriate amount of seed money required, based on the number of proposals submitted to external funding agencies. This budget may also include certain high-end equipments required exclusively for research, in the thrust areas identified by the department.

All HsOD shall submit a report on the amount spent on R&D for the prevailing financial year by 10th of April. The R&D expenses shall invariably include:

- External Funded Projects
- Faculty Development Programs, Conferences, Workshops, STTPs, Symposia etc. (organized and attended by faculty)
- Specific Procurement for Research
- Honorarium paid for talks and lectures by eminent researchers
- Industry Institute Interaction (Students and Faculty)
- Collaboration and MoU with Industry and R&D Organization

Important Links

- http://www.dst.gov.in (DST)

- http://www.dae.gov.in (DAE)

- http://www.isro.org (ISRO)

- http://www.csir.res.in (CSIR)

- http://www.aicte-india.org (AICTE)

- http://www.ugc.ac.in (UGC)

- http://www.dbtindia.nic.in (DBT)

- http://www.barc.ernet.in (BARC)

- http://www.indianpatents.org.in (INDIAN PATENTS)

- http://www.jpo.go.jp (JAPAN PATENT OFFICE)

- http://www.uspto.gov (U. S. PATENTS & TRADEMARKS)

Standard Operating Procedure for R&D

SCOPE: A Standard Operating Procedure (SOP) is a set of written instructions that document a routine or repetitive activity which is followed by employees in DYPSOE. It provides information to perform a job properly, and consistently in order to achieve quality end-result.

PURPOSE: The purpose of this SOP is to describe the process of reviewing and obtaining approval for R&D applications.
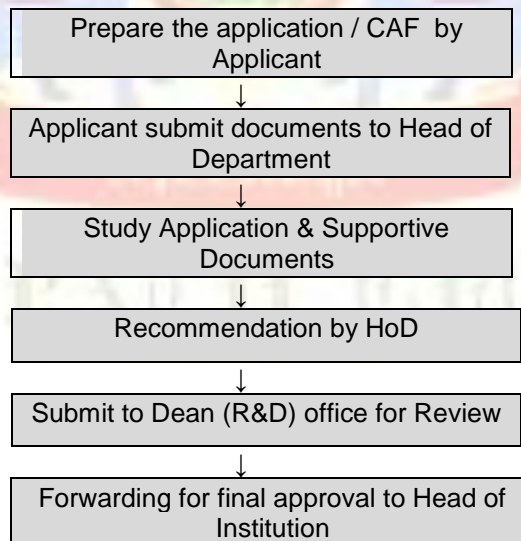
RESPONSIBILITY:

- Person Performing: Applicant of concerning departments
- Person Monitoring: HsOD, Dean (R&D) & Director

SUPPORTING DOCUMENTS:

- Brochure of the Conference / WS /Seminar ….etc.
- Career Advancement Form
- Acceptance letter
- Statement of Purpose
- Report - Review of literature in case of Patent
- DRC Report for financial assistance (Patent, BE / ME Project, Research Project…..etc)

PROCEDURES FOR APPROVAL:

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┌─────────────────────────────────────┐
│   Prepare the application / CAF  by  │
│              Applicant               │
└─────────────────────────────────────┘
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┌─────────────────────────────────────┐
│ Applicant submit documents to Head of│
│             Department               │
└─────────────────────────────────────┘
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┌─────────────────────────────────────┐
│    Study Application & Supportive    │
│              Documents               │
└─────────────────────────────────────┘
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│         Recommendation by HoD        │
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                   ↓
┌─────────────────────────────────────┐
│  Submit to Dean (R&D) office for Review│
└─────────────────────────────────────┘
                   ↓
┌─────────────────────────────────────┐
│ Forwarding for final approval to Head of│
│             Institution              │
└─────────────────────────────────────┘
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IMPLEMENTATION: All respective HsOD are responsible for implementing this procedure.

REFERENCE: R & D Manual