

KINGS

ENGINEERING COLLEGE

An Autonomous Institution

Affiliated to Anna University, Chennai



R & D Hand Book

As per the Approval of Governing Council

(Updated in 2025)

About the Institution

Kings Engineering College, established in 2001, is a Christian Minority Self-Financing institution approved by the All-India Council for Technical Education (AICTE), New Delhi, and affiliated with Anna University, Chennai, along with Accreditation by NAAC, Holding 25 years of Expertise in Education.

Vision

The Vision of Kings Engineering College is to provide industry relevant technical education, motivate our technocrats to carry out skillful research and encourage innovation and thereby uplift our society through technology.

Mission

Provide high quality technical education in the major engineering disciplines through a creative balance of academic, professional and extracurricular programs.

Prioritize quality teaching and adopt a variety of approaches and methods to grow upon current research and multiple theories of teaching and learning.

Guide the student to earn secure careers and become a trendsetter.

Sponsor and educate less privileged with quality technical education.

Management

The college is managed by the **Chartian Educational and Health Trust**, a registered public trust for education and charitable purposes, under the aegis of the **Rajam Group of Companies**, Chennai, which also oversees **Queens Land Amusement Park** and the star-category **Pleasant Days Hotel**.

Objectives of the Trust

Establish the college as a unique hub of excellence in higher education, dedicated to total quality management across all levels.

Elevate the techno-social standing of young individuals through a range of undergraduate engineering degree programs.

Commit to uplifting economically disadvantaged community members, improving their financial status through generous assistance.

About the R&D Cell

Kings Engineering College (KEC), established in 2001, is a research-focused technical institution committed to fostering innovation and research excellence.

Our Research and Development (R&D) Center is dedicated to cultivating a robust research culture, enhancing laboratory facilities, and promoting collaborative and sponsored research initiatives.

KEC has promoted meaningful scientific industrial Research and Development activities with a vision and mission to pursue and promote Research in various disciplines of Engineering. For any education, specifically technical education, the basic model of a ‘teaching – only’ institution is inadequate to ensure quality education. In all disciplines of technical education, knowledge is dynamic with new technologies being introduced very frequently.

In this scenario, it is not possible for the teachers to deliver good quality instructions without being tuned to the current developments in the subjects, for which they must constantly update their knowledge. A well-recognized way to deal with this paradigm is for the teachers to be active researchers in the areas in which they interested. As researchers, they need to understand the past and recent developments in their subject areas. Research and Development cell was established at KEC to inculcate research and innovative skills among faculty and students.

R&D Cell provides a platform for creativity and innovation to flourish young minds in Institute. Innovative breakthroughs will happen only because of meticulous efforts of R&D. The Institute provides SEED amount to facilitate basic common research infrastructure for individuals to execute collaborative work.

KEC R&D cell is a nominated committee consisting of Professors from various programs of Engineering. This committee oversees the smooth and efficient coordination of research and development activities in the Institute, thus fostering overall growth. The organizational structure consists of Advisor, Principal, Dean and Coordinators for facilitating the routine functioning of the cell.

COMPOSITION OF R&D CELL

Advisory Committee- Institute Research Advisor, Principal, Dean and 3 or 5 renowned external Academic Personalities with sufficient Research and Administrative background.

Institute Research Advisor- a Professor with at least 10 years of research supervision experience

Coordinators- 5 to 7 teaching faculty members from the Institute, with research supervising experience and 1 or 2 non-teaching officers representing with experiences in research related administrative duties.

RESPONSIBILITIES OF MEMBERS

Advisory Committee- The role of advisory committee to RDC is to give advises on research matters whenever necessary.

Coordinators- Coordinators are expected to report back on Institute research committee business to their constituents (in faculties, research students, other committees), as well as participating in committee discussions and decision making.

Institute Research Advisor-

- Thorough knowledge of grants/funds availability for research projects/FDPS/Seminars/Workshops for students and faculty
- Acting as a liaison with other Institute administrative support units, sponsors, and auditors.
- Support research student and faculty in the development of proposals and related financial narratives and budgets
- Thoroughly understand unallowable, direct, and facilities and administrative (F&A) costs.
- Assuring that costs incurred under sponsored research projects conducted within the department comply with sponsor and University policies Meeting

The R&DC will meet at least four times per year.

Objectives

- To foster scientific temper.
- To generate innovative ideas on academic and societal problems
- To Encourage, Coordinate And Implement Research And Development Programs (workshops/ seminar/ trainings)
- To create awareness on evolving technologies and industrial standards for products.

- Provide scope for faculty and students to work on latest evolving technologies with industry standards through consultancy projects.
- To identify and inform researchers about the appropriate research opportunities announced by different academic, research, industry or government organisations.
- To encourage and facilitate the publication of the research work/projects in reputed academic journals and reputed conferences
- To prepare and implement a research quality assurance mechanism for ensuring that all research activities of the college conform to standard quality specifications.
- To develop, prescribe and administer rules and regulations to ensure the compliance of all researchers to the research quality assurance framework and the research code.
- To encourage Core Competence and Consultancy work
- To create awareness about filing Patents & IPR

R & D CELL MAIN ACTIVITIES

- Assists faculty, research scholars and students in filing research proposals for grants from various funding agencies like DST, AICTE, MHRD etc.
- Allocates funds for in-house R & D projects of the faculty, research scholars and students.
- Assists the faculty, research scholars and students in filing of IPRs like patents and copyrights.
- Creating awareness and motivating researchers to work in emerging domains of engineering and technology.

RESPONSIBILITIES OF R&D COMMITTEE

- To prepare annual research activity plan for all the departments.
- To establish liaison with near and far industry and identify the technological challenges being faced by them. Strengthen industry institute interaction through MOUs for long term relationships with national and international research organisations for widening the scope of research options and funding opportunities for faculty and students.
- Take up appropriate problems of the industry for finding solutions through R&D projects assigned to faculty and students.

- Explore technological developmental opportunities in common application areas such as transport, traffic regulation, security, healthcare etc. and assign them to faculty and students.
- To initiate and promote MoU with industries and R&D organizations for consultancy, collaborative research, sponsored projects, industry and Institute interactions etc.
- To arrange brainstorming sessions through talks 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, symposia and faculty development programs.
- To keep everyone informed about announcements by various funding agencies like DST, DAE, DRDO, ISRO, CSIR, AICTE, UGC and University etc.
- To motivate students for presenting papers in National and International conferences and projects in competitions and exhibitions like AVISHKAR at university level. Inter departmental / collaborative work to be encouraged.
- To monitor progress of the research and development activity.

RECOMMENDATIONS AND IMPACT

- Publications in Research Journals.
- Research Proposals for different funding agencies.
- Participation and Organizing Conferences, Workshops and STTP/FDP.
- Participation in Collaborative Research work, e.g. VAP /Industrial Training.
- Encouragement for Higher Education.
- Signing MOU with Industries and Research Organization.

R & D CELL POLICY

To create good infrastructural facilities and conducive environment to inculcate research culture. Policy framework as follows –

Research and development department is inevitable to get a global recognition of the institute. In order to promote the research activities inside the campus, the following things are to be ensured.

1. It is important to identify the faculty members who have passion in conducting the research works.
2. They should be aware of the nature of research works that they wish to accomplish (Analytical, Experimental and Simulation).
3. They should have a sufficient knowledge about the availability of the facilities inside the campus and outside so that they can execute their research works within a stipulated time.
4. Digital library including the access of e-journals from reputed publishers (IEEE, IET, Elsevier, Springer Nature, etc.) should be provided to the research faculty.
5. With the above facility, they can have a thorough knowledge on the literature survey and thereby, they can develop the innovative works that is to be unexplored yet.
6. They can be permitted to attend the international conferences that are conducted by the premier institutes such as IITs, NITs, Regional and Central Universities.
7. When the research faculty attends the above mentioned forums, they have an opportunity to interact with the globally acknowledged researchers and consequently, this may make an impact on their research works.
8. Foremost thing is to establish the research facilities that are identified as the emerging fields and as a result, it could lead to provide room for the promotion of the inter-disciplinary/multi-disciplinary research works.
9. With the above research facility, our college can generate revenue through consultancy.
10. Some part of the revenue through consultancy may be provided to the person who provides the service to the outside students/scholars/faculty/industrial persons.
11. Further, a workshop, seminar, or guest lecture on research methodology can be organized once in a semester to the aspiring researchers so that, the scope for executing the quality of the research works inside the campus may be better.

12. Collaborative research works should be encouraged to break the ice in the most challenging areas.
13. Research faculty members may be permitted to take on-duty (OD) in order to expedite their works (Experimental facility, Testing, Simulation, Discussion for interpretation of the results, etc.).
14. The faculty members acquired Ph.D. degrees should get the supervisor recognition of the Anna University.
15. To ascertain the research ambience inside the college, all the departments must get the research centre approval from the Centre for Research, Anna University.
16. The Full-time Ph.D. scholars may be provided a stipend per month for the period of three years and they may be allotted laboratory work load for 10 hrs/week.
17. No. of scholars registered under our faculty members could be beneficial for the institute as they can publish the quality papers in SCI/Scopus journals consistently.
18. Especially, In NIRF ranking, more weightage is given to the number of scholars registered in the institute and journal publication.
19. The Staff members are informed to publish their research works in terms of Patents / Grant / Copyright / Journals with high impact factors.
20. All the final year students are informed to publish their project works in terms of Patent or journal publications through International Conferences.
21. The faculty with Professor Designation should publish 2 papers in SCI/SCI-E journals every year: Likewise, Associate Professor and Assistant Professor should publish 2 papers (1 SCI and 1 Scopus) and 1 paper either in SCI or Scopus indexed journal, respectively.
22. Incentive may be provided to the author holding first, second or corresponding position in the paper.
23. Professor must submit 2 project proposals per year whereas; Associate Professor and Assistant Professor must submit 1 project proposal per year to the funding agencies.
24. Incentive may be provided to the Principal Investigator (PI) or Co-PI for the funded projects sanctioned by the government funding agencies.

25. A monitoring committee constituted by the Dean (Research) should review the progress of the research faculty members once in a month. The report of the same may be brought to the knowledge of the management.
26. Promotion of the faculty members should be based on the research progress [Journal publications, funding projects, organizing the conferences, Keynote speaker, and Editorial board (Scopus/SCI Journals)].
27. Seed money may be provided to the aspiring faculty members in order to accomplish the innovative research projects.
28. Sabbatical leave may be approved to the faculty members who wish to pursue PhD/PDF.

A. FINANCIAL ASSISTANCE TO STUDENTS FOR RESEARCH

- a) Students will get reimbursement towards paying registration fees for presenting the paper in the conference. Also, students participating in various events such as technical quiz competition, technical fest, and technical poster presentation competitions at state level as well as at national level will be reimbursed by the institute.
- b) Institute motivates the students for undertaking the interdisciplinary projects and provides required financial support.
- c) Final year students will be given reimbursement for performing tests on the samples in the outside laboratory if required for their project work. Students must seek prior approval from concerned project guide and HOD.

Financial assistance to Students for Research Process:

- Students are informed about R&D initiatives by the respective department R&D coordinator.
- Students willing to publish research paper/participate in any technical activities shall approach the department R&D coordinator
- Students need to submit application signed by concerned HOD and their department R&D coordinator to the institute R&D in charge.
- On approval, the student registers for the conference.
- Students attend the conference.
- For reimbursement purpose, students must enclose receipt of registration fees, first page of paper and conference certificate along

with application and submit it to department R&D coordinator. Department R&D coordinator approves the request.

- Students submits the above approved documents to the Principal for approval.
- Principal finally approves the application for reimbursement.
- Students needs to submit bills of expenditure to the head of department for approval and then to the accounts department for reimbursement.

Students submits the above approved documents to the accounts for reimbursement.

B. FINANCIAL ASSISTANCE TO FACULTY FOR RESEARCH

- The college provides financial support by reimbursing registration fees only for presenting papers in reputed National/International conferences held within India and for attending FDP/STTP/workshop/Seminar in other organizations in India.
- Faculty would also look for an alternate source of funding for participation in a conference viz., AICTE/UGC etc.
- The faculty can avail OD for attending the conference/FDP/STTP/workshop/Seminar.
- The faculty should fill the required forms, get the approval and submit the same to the office before proceeding for the same.
- The total cost of organizing any technical event for student and faculty will be borne by the institute.

Financial assistance to faculty for Research (Conference /FDP/STTP/workshop/Seminar) Process:

- All requests for grant have to be made prior to the conference. Faculty members will submit the application for grant when they receive the letter of acceptance from the conference committee.
- The recommendation of Head of Department, Department R&D coordinator & subject expert is required for availing the conference sponsorship.
- On approval, the faculty registers for the conference and Faculty attends the conference/FDP/STTP/workshop etc.
- For reimbursement purpose, faculty must enclose receipt of registration fees, first page of paper and conference/workshop certificate along with application and submit it to department R&D coordinator.

- Faculty submits the above approved documents to the Principal for approval within 15 days of attending the conference.
- Principal finally approves the application for reimbursement.
- Faculty submits the above approved documents to the accounts and gets reimbursement

INITIATIVES TAKEN TO INCULCATE THE SPIRIT OF RESEARCH AMONGST FACULTY AND STUDENTS ARE AS FOLLOWS

A. Innovation and Entrepreneurship Development Cell

Innovation and Entrepreneurship Development Cell (IEDC) is established to cultivate an entrepreneurial culture in KEC and to foster the techno entrepreneurship for generation of wealth and employment by KECIANS. The IEDC helps the student community to conduct the research work and survey for identifying entrepreneurial opportunities. The main objective of promoting an entrepreneurship among the youth is to nurture the passion for self-employment. This will open the gates for the creation of a new knowledge-based innovative hi-tech ventures, industries and a new breed of techno entrepreneurs and more avenues of employment opportunities, thus turning the job seekers into the job creators and in this process, leading a nation towards the industrial excellence and the self-reliance. The Innovation and Entrepreneurship Development Cell of this college aims towards achieving the above.

B. Incubation centre

To have your own Start-up you need to know the “Technical know-how” of today's industry. Here we provide such an incubation centre for students to develop, evolve, and learn from their mistakes and PROGRESS. The significant factors indicating potential growth in the research activities includes the enhancement in the research publications in peer reviewed journals, Research Projects/grants, Patents, Collaborations, Doctoral program and Faculty development. R & D cell is focusing the attention on the following major activities:

C. Research Publications

As a result of tireless efforts taken in the research activities, the college has to its credit many research publications in National and International peer reviewed Journals. The faculty members have also presented research papers in various reputed national and international conferences. The total 108 plus research papers have published during academic Year 2017-to 2020, out of which 80 research

papers have been published in journals and remaining have been published in conferences.

D. Research Projects

One of the important criteria to judge the performance of research output of the institution is to obtain recognition by reputed Government/Autonomous sponsoring agencies towards generation of funds to conduct quality research. The institute would attempt to receive a number of research grants from agencies like DST, AICTE, IET, DRDO, CSIR etc. in near future. In addition to this, KEC has also encouraged the faculty members to initiate research by giving the seed money to undertake various minor research projects.

E. Ph. D. Programs

Quality engineering education coupled with innovative research and development is absolutely essential towards the overall faculty development. The KEC encourages higher education of faculty members to keep abreast of continuous technological development.

Major Goals of the Research Center

Establish and Nurture Research Culture

We strive to create an environment that encourages inquiry, critical thinking, and continuous learning among faculty and students.

Develop and Augment Research Labs

Continuous investment in state-of-the-art laboratories ensures that our researchers have access to the latest tools and technologies.

Encourage Sponsored Research & Enhance Facilities

We actively seek partnerships with industry and government agencies to fund research projects, thereby expanding our research capabilities.

Provide Ambience for State-of-the-Art Research

Our campus offers a conducive atmosphere for advanced research activities, fostering innovation and discovery.

Engage in Collaborative Research

We collaborate with national and international institutions to undertake research projects of global significance.

Pursue Focused Research Towards International Expertise

Our research endeavors are directed towards achieving international recognition and expertise in key technical domains.

Research Laboratories

Our R&D Centre houses specialized laboratories equipped with cutting-edge technology to support diverse research activities

Machine Vision Software & Hardware Labs

Facilitates research in image processing, computer vision, and related fields.

Robotics Labs

Provides resources for the development and testing of robotic systems and automation technologies.

Project Incubation Centre

Supports the transformation of innovative ideas into viable projects and prototypes.

MATLAB

Offers a high-performance environment for technical computing and model-based design.

Chemistry Research Lab

Equipped for advanced research in chemical sciences and engineering.

Research Affiliations

Our **Electronics and Communication Engineering Department** is recognized as a Research Center affiliated with Anna University, Chennai. This affiliation authorizes the department to offer M.S. (by Research) and Ph.D. programs, enabling scholars to pursue advanced research under expert guidance.

At KEC, we are dedicated to advancing knowledge through rigorous research and innovation. Our R&D Center serves as a catalyst for scholarly activities, providing the necessary infrastructure and support to transform ideas into impactful solutions.