COEP Technological University
(COEP Tech)
A Unitary Public University of Government of Maharashtra
Wellesley Road, Shivajinagar, Pune-411005, Maharashtra, India

INFORMATION BROCHURE & APPLICATION FORM

For

Admission to Doctor of Philosophy (Ph. D.) Program

AY 2024-25

(Winter Semester)

Table of Contents

1. Ph.D. program offered by COEP Tech

The Doctor of Philosophy (Ph.D.) Program is offered by the following Departments in the related areas of specializations.

For PhD (Technology)	
Program Name	**Broad Areas of Research**
Civil Engineering	Environmental Engineering, Structural Engineering, Geotechnical & Transportation Engineering, Transportation Engineering, Geotechnical Engineering, Construction Management & Sustainable Construction, Water Resources Construction Management, Construction Engineering, Construction Techniques, Construction Materials, Construction Technology, Contract Management, Geospatial Technology, Building Drawings, Transportation Engineering Environmental Engineering, Solid Waste Hazard Mgmt., Industrial Waste Hazard Mgmt., Environmental Impact Assessment, Advance Hydraulic, Water Resource Management, Air & Noise Pollution, Environmental Sustainability, Irrigation Engg., Water Resource Management, Advanced Hydrology , Ground WaterHydrology, Open Channel Flow, Dam & Hydraulics Structure, Geospatial Technology. Structural Health Monitoring, Composite Materials, Performance Based Design for Tall Structures, Stability & Seismic Analysis of Cold-Formed Steel Structures, Geotechnical Engineering.
Computer Science & Engineering	AI & Image Processing, Machine Intelligence, Neural Networks, AI & Data Science, Cloud, Networking and Security, Cloud Virtualization, VM Management, Digital Forensics on Operating System, Fog (Edge) Computing, Federated Learning, Network Function Virtualization (NVF), Data Mining, Machine Learning, Big Data Analytics, Deep Learning, Database Design, Algorithms, Network and Information Security, Block Chain, Digital Forensics, IDS, Natural Language Processing, Text Mining, Deep Learning, Data Privacy, Cyber & Information Security, Blockchain, Security in web services, Mobile Application Development, Bioinformatics, Data Security, Robotics & AI, Data Mining, Web Application Security, Wireless & Mobile Security, Parallel & Distributed Computing, Deep Learning using GPU Architecture, Multicore Memory System Performance Issues, Cloud & Big Data Analytics, Data Pipeline, Cloud Platform Selection Application Based, Workflow Analysis of Cloud Based Application, Machine Learning for Data Analytics, Data Mining Algorithms for IOT Data Analytics, Optimization of Machine Learning Algorithms, Computer Network.
Electrical Engineering	Power and Energy Systems: Robust and Efficient System Planning, operation and Control, Renewable Energy Integration, Optimal Operation and Control of Power Systems, Power System Protection, Smart Grid, Operation and Control of Micro Grid etc. Power Electronics and Machine Drives: Converters for Renewable Energy and Electric Vehicles, E-mobility, Industrial Drives, Design and Development of Power Electronic Converters etc. Control Systems: Non-linear Systems and Control, Intelligent Control, Optimal Control, Industrial Control and Automation etc.
Electronics & Telecommunication Engineering	Optics & Sensing, Sensor Designing & Development, Biosensors, Bio-MEMS, VLSI Fabrication, Nanotechnology, Nanomaterials, Lab-On-Chip, Micro fluidics, Wireless Communication, Antenna & RF Technologies, Plasmonics, Experimental Physics, Digital Image Processing, Content-Based Image Processing, Deep Learning, AI & ML, IoT, Computer Vision, Signal

	Processing, Bio-Medical Applications.
Instrumentation & Control	Sliding Mode Control, Vehicle Technology, Image Processing, Process Control, Chemical & Gas Sensors, Smart Sensors, Analytical Instruments, Robotics & Control, Process Control, Medical Robotics, Robust Control, Power Electronics, Power Convertors & its Control, Battery Management System, Biomedical Instrumentation, Signal Processing & Extraction, Renewable Energy Control, Precision Automation, Soft Computing.
Manufacturing Engineering & Industrial Management	Micro Manufacturing, Condition Monitoring, Reliability Engineering, Electrical Discharge Machining, Friction Stir Welding, Manufacturing, CAD/CAM, Reverse Engineering, Additive Manufacturing, ERP, Computer Aided Inspection, Biomedical Device Development, Design for Manufacturing, Smart Manufacturing, Manufacturing Science & Engineering, Condition Monitoring, Manufacturing, Robotics, Manufacturing Engineering, Metrology & Quality Control, Application of AI in Manufacturing, Micromanufacturing, Electrochemical Micromachining, Micro Matching of Advanced Materials, New Product Development, Design for Manufacturing, Biomedical Device Development, Smart Manufacturing, Industry 4.0, Technologies in Manufacturing, DT, IOT, AM, CPS, MAAS/EAAS Mechatronics, Robotics & Manufacturing Automation, Supply Chain & Logistic Management, Production & Operations Management, ERP, Production & Industrial Engineering, Manufacturing Science & Engineering, Micromachining, Maintenance Engineering & Tribology, Non-Conventional Manufacturing, Product Design & Prototype.
MechanicalEngineering	MEMS, Dynamics, Vibration, Condition Monitoring, CFD, IC Engines, Alternative Fuels, Compliant Mechanism, Micro Manufacturing, AI-ML, Industrial Engineering, CAD/CAM/CAE, FEA, Biomaterials, Micro Machining, Laser Machining, Acoustics, Laser Welding, Design Engineering, Tribology, Reliability Engineering, Maintenance Manufacturing Management, Forming Processes, Rapid Prototyping, Composite Materials, Fracture Mechanics, Functional Graded Materials, Auxetic Materials, Heterogeneous Material Modelling, Human Body Segment Modelling, Integrated Thermal Management technology for BEV vehicle, Laser Material Processing, Biomechanics, AI/ML in enhancing product performance & capability, IoT in product development, Third party calibration of Industrial Robot, Redefining the sustainability in Agriculture using Robotization.
Metallurgy & Materials Engineering	Development Of Anode Materials For Solid Oxide Fuel Cell, Valorization Of Slag/Ash, Agricultural Waste Utilization & Biochar Development, Development Of Water Filter To Improve Boiler Efficiency, Sensor Materials For Precision Agriculture, Polymeric Materials, Plastic Waste Management, Nanomaterials & Their Synthesis, Nano Composites, Advanced Composites, Composites For Electronic, Tribological, Biomedical, Aerospace & Automobile Application Etc., Alloy Synthesis, Cryogenic Treatment, Tribology Of Materials, Energy Materials, E-Waste Management, Powder Metallurgy, Powder Metallurgy, 3 D Printing, Thermo-Mechanical Treatment, Corrosion & Surface Protection, Material Design & Property Optimization.
Planning	Urban & Regional Planning, Architecture, Town & Country Planning

For PhD (Science and Humanities)	
Mathematics	Matroid Theory, Coding Theory, Graph Theory, Fractional Calculus, Computational Mathematics.
Physics	Linear and nonlinear optics, Nanotechnology, Magnetic materials, Gas sensor Nanotech materials
Chemistry	Chemistry
Environmental Science	Plant Ecology, Biology, Geology, Environmental Sciences
Humanities	Psychology, Design Thinking, Relationship, Emotional well being

2.   Important dates:

Process Information	Dates
Commencement of online application form submission……………………....	28th October 2024 (12 pm)
Closure of online application form submission……………………………..	30th November 2024 (8 pm)
Grievance period………………………………………………………..	02nd 03rd December 2024
Display of provisionally eligible candidates for RPET on the website…………	04th December 2024 (9 pm)
COEP Tech's Offline RPET – (MCQ type) shall be conducted in campus………	07th December 2024
Display of shortlisted candidates for interview……………………………..	07th December 2024 (8 pm)
Interview dates of shortlisted candidates………………………………..	09th December 2024 (10 am)
Display of list of selected candidates for admission…………………………	10th December 2024
Confirmation of admission at COEP Tech……………………………….…	16th December 2025 (5 pm)

3.   Application Processing Fee:

General Category candidates:	**Rs. 1000/-**
Reserved Category candidates: SC, ST, VJ/DT- NT(A), NT(B), NT(C), NT(D), OBC, SBC, EBC, EWS & Persons with Disability Candidates	**Rs. 500/-**
Foreign National /Overseas Citizen of India /Person of Indian Origin /Children of Indian Workers in Gulf Countries / Non Resident Indian	**Rs. 5000/-**

Application processing fee shall be paid online as per procedure given in Annexure –VIII. Application Processing Fess is non-refundable.

4.   Submission of the application:

All aspiring candidates shall submit their application form with necessary application fees (along with all the relevant certificates/documents) online through link available on - https://www.coeptech.ac.in/admission/ph-d/ (online submission of application without necessary scanned copy of certificates/documents will not be considered).Candidate should make sure that proper Institute/ Discipline are entered & all relevant details are duly filled in the respective fields.

Access to the link for *online submission of application opens on 28.10.2024. Last date* for the *online submission of application is 30.11.2024 at 5.00 pm*.

5.   Online link to fill Ph.D. application form: https://phdadmission.coep.org.in/

6.   Eligibility for Admission

Educational Qualification:

Eligibility criteria for securing admission are as per University Grant Commission (UGC) (Minimum Standards & Procedures for Award of Ph.D. Degree No. CG-DL-E-07112022-240086) & COEP Technological University (COEP Tech), PhD Program latest Rules & Regulations.

For eligibility criteria candidates must read "Guidelines-Rules-and-Regulations-Ph.D.-Programs-w.e.-f.-Nov-2024.pdf".

All the applications will be scrutinized/shortlisted based on data submitted by the candidate in the online

application form. If, at any stage, candidates found to have furnished false or wrong data/ information, their candidature/admission will be rejected/cancelled.

Sr. No.	Name of the Department	Eligibility for Ph.D.
1)	**Engineering and Technology**	A 2-year/ 4-semester master's degree in engineering/technology programme after a 4-year/8-semester bachelor's degree engineering/technology programme or qualifications declared equivalent to the master's degree by the corresponding statutory regulatory body, with at least 55% marks at masters in aggregate or its equivalent grade in a point scale wherever grading system is followed. OR Equivalent qualification from a foreign educational institution accredited by an assessment and accreditation agency which is approved, recognized, or authorized by an authority, established or incorporated under a law in its home country or any other statutory authority in that country to assess, accredit or assure quality and standards of the educational institution.
2)	**Sciences and Humanities**	A 2-year/4-semester master's in science/master's in Humanities/ master's in computer applications after a 3-year/4-year Bachelor of Science/Humanities/Computer Applications program or qualifications declared equivalent to the master's science by the corresponding statutory regulatory body, with at least 55% marks at masters in aggregate or its equivalent grade in a point scale wherever grading system is followed. OR Equivalent qualification from a foreign educational institution accredited by an assessment and accreditation agency which is approved, recognized, or authorized by an authority, established or incorporated under a law in its home country or any other statutory authority in that country to assess, accredit or assure quality and standards of the educational institution.
3)	**Planning**	A 1-year/2-years master's degree in planning/Remote Sensing/GIS or equivalent professional degree (after a 4-year Bachelor's degree in Planning/Architecture/Civil Engineering), with at least 55% Marks or or its equivalent grade in a point scale wherever grading system is followed. OR Equivalent degree from a foreign educational institution accredited by an Assessment and Accreditation Agency which is approved, recognized or authorized by an authority, established or incorporated under a law in its home country or any other statutory authority in that country for the purpose of assessing, accrediting or assuring quality and standards of educational Institutions.

- A relaxation of 5% in marks or 0.5 in CGPA (where equivalence between percentage and CGPA is not declared) for candidates belonging to constitutionally declared reserved categories, persons with disability, and other categories of candidates as per policies of the Government of Maharashtra prescribed from time to time.
- Candidates with Junior/Senior research fellowships from CSIR/ UGC/ DST/ ISRO/ BARC/ DRDO/ any recognized/authorized Government organization entitled to offer such award can be considered for admission to the

Ph.D. Programme if he/she has a minimum of 2 years of professional work experience and fulfils criterion mentioned in above eligibility criteria table.

- Candidates working in National Laboratories/Institutes of National Importance/Government sector/ Industry/ Corporate who are nominated/sponsored by the respective employer and fulfils criterion mentioned in above eligibility criteria table.

- A graduate in Engineering/Technology (B.E./B.Tech.) with an outstanding academic record (more than 75% marks or CGPA of 8.0 on a 10-point scale) may be permitted by the RRC subcommittee on the recommendations of respective DRC to submit his/her proposal for admission to Ph.D. Programme in that discipline. A relaxation of 5% in marks or 0.5 in CGPA for candidates (where equivalence between percentage and CGPA is not declared) belonging to constitutionally declared reserved categories, persons with disability, and other categories of candidates as per policies of the Government of Maharashtra prescribed from time to time.

- Above-mentioned rules in this section will also be applicable to foreign candidates who have obtained Master's degree from statutory Indian Universities.

- Application for inter-disciplinary areas and from applicants belonging to a faculty/domain/discipline other than the faculty/domain/discipline in which it is proposed and from the international candidates (those who have not obtained the degree from Indian Universities) shall be considered based on the proven ability and aptitude test. Such a proposal shall be examined by the DRC and the RRC subcommittee for giving provisional admission. The admission will be confirmed after the RRC approves the broad domain area and outline of the proposed research.

- A candidate is supposed to work with a supervisor in a normal Programme, but as a very special case, the RRC may allow a candidate to register for Ph. D. independently, i.e., without having to work under the direction of a supervisor, provided that the candidate is eligible and has demonstrated ability to undertake the proposed research independently.

- Ongoing Masters Candidates of the University with outstanding performance in their first year are eligible for admission to an integrated Ph.D. Programme in the concerned discipline on recommendation from the Supervisor, DRC and approval from RRC subcommittee

7. **Procedure for Admission to Ph.D. programs**

   a. The admission shall be based on the criteria notified by the university, keeping in view the guidelines/norms in this regard issued by the UGC & other statutory/regulatory bodies concerned, & taking into account the reservation policy of the Maharashtra State Government / University guidelines from time to time. If, at any stage, candidates found to have furnished false or wrong data/ information; their candidature/admission will be rejected/cancelled.

   b. Admission to the Ph.D. program shall be made using the following methods:

      i. Aspiring candidates must read the "Guidelines-Rules-and-Regulations-Ph.D.-Programs-w.e.-f.-Nov-2024.pdf".

         The selection of candidates eligible for exemption of COEP TECH's Research Program Eligibility Test (RPET) will be based on personal interview.

         The selection of candidates appears for COEP TECH's Research Program Eligibility Test (RPET) will be based on RPET valid score and personal interview.

      ii. University may admit students through an Entrance Test (RPET) conducted at the level of the individual. The Entrance Examination will be of 100 marks with multiple choice type questions. The examination will consist of two papers, each carrying 50 marks: Paper I (Research Methodology) and Paper II (Mathematics).

      iii. Students who have secured aggregate of 50% marks in the entrance test shall be eligible to be

called for the interview.

iv. A relaxation of 5% (from 50 to 45 %) marks will be allowed in the entrance examination for the candidates belonging to SC/ST/OBC/persons with disability, Economically Weaker Section (EWS), SEBC, & other categories of candidate as per the decision of the university from time to time.

v. University may decide the number of eligible students to be called for an interview based on the number of Ph.D. seats available.

vi. The candidates securing a minimum of 50 % marks in the RPET exam, or a GATE/NET/SET/CSIR qualified candidate shall be eligible to be called for the interview. The interview will solely be the criteria for selection of candidate for PhD admission. During the interview, candidates will be interviewed by a panel of experts & PhD guides.

vii. The FN/OCI/PIO/CIWGC/NRI candidates shall submit the necessary documents as mentioned in **Appendix VII** through email to phdadmission@coeptech.ac.in. These candidates shall fill the online application form before sending the documents through email.

viii. While filling the application form keep the scanned copy of the following documents ready.
   a. Proof of identity (Copy of Aadhar card/ Passport/ Driving License).
   b. Proof of qualification (UG & PG marksheet, as applicable).
   c. Cast Certificate & Certificate of Validity, if applicable.
   d. Non-Creamy Layer Certificate as mandated for the particular category.
   e. Valid GATE/NET/SET/CSIR scorecard in case of exemption from RPET.
   f. Sponsorship Certificate in case of sponsored candidates.
   g. Proof of experience.
   h. No Objection Certificate from the employer.
   i. Migration Certificate.
   j. Any other Document supporting exemption for RPET.
   k. Statement of Purpose (Research Topic – One page summary).

8. **Seat Matrix: -**

The number of seats depends upon the number of available research guides in the university, vacancies available with the guide & research infrastructure in the concerned department. The admission of candidates to Ph.D. program depends on the expertise available in a department & the willingness of the candidate to work in the corresponding research area.

The following table shows the tentative number of seats available in various departments for admission during December 2024 session, however, the number of seats may increase/decrease as per the vacancies available at the time of admission & it is also not mandatory to the university to fill all vacant positions displayed in AY 2024-25 only.

For PhD (Engineering & Technology)		
Sr. No.	**Department**	**Number of Vacant seats**
1	Civil Engineering	16
2	Computer Engineering	25
3	Electrical Engineering	9
4	Electronics & Telecommunication Engineering	22
5	Instrumentation & Control Engineering	20
6	Mechanical Engineering	34
7	Metallurgy & Material Science Engineering	14
8	Manufacturing Engineering & Industrial Management	27
9	Planning	4
Total Number of Vacant seats -		**171**
For PhD (Science and Humanities)		
Sr. No.	**Department**	**Number of Vacant seats**
1	Mathematics	14
2	Physics	18
3	Chemistry	04
4	Environmental Science	09
5	Humanities	04
Total Number of Vacant seats -		**49**

* A PhD supervisor in Technology can also supervise science students.

* Reservation policy in the admission will be implemented as per the norms of State Government of Maharashtra. Category wise vacant positions will be displayed by the respective department on the day of Interview.

9. **Exemption from the Written Test**

The following candidates shall be exempted from Written Test:

i. Candidates qualified, having valid scores in GATE/NET/SET & any other JRF holder of the apexbodies like CSIR/ UGC/ ICAR/ ICMR/ DBT/ DST/ ICSSR.

ii. Ph.D. degree holder of any recognized University who desires to pursue Ph.D. at COEP Tech

10. Types of Ph. D. candidates, Fee structure:

SN	Category	Remarks
1	Research Scholars	Candidates pursuing PhD program on campus on regular basis and admitted for the PhD program with GATE/NET qualification or qualifying University entrance exam Research Program Eligibility Test (RPET).
2	Sponsored Candidates	Candidates sponsored by recognized Govt. Institute/R&D organization/ Industry /Corporate/host university for pursuing PhD program on a regular basis at the University. Candidate should qualify University entrance exam (RPET) for PhD admission if not having valid GATE/NET qualification. Candidates are expected to be released for research work at the University for a minimum period of three years. A sponsorship letter should be attached to the application form.
3	External Candidates	Candidates from Industries/other Educational Institutes or Self-sponsored with more than 2 years of experience. Working candidates need to produce "No Objection Certificate" for admission to Ph.D. programme from the appropriate authority in the organization where he/she is employed. Candidates should qualify University entrance exam (RPET) for PhD admission if not having valid GATE/NET qualification. Candidate may be sponsored by organization or self-sponsored.
4	AICTE Doctoral Fellowship (ADF) Awardees	Candidates admitted under AICTE ADF fellowship scheme. Admissions will be carried out as per the University norms.
5	AICTE Quality Improvement Programme (QIP) Candidates	Full-time regular/ permanent faculty members of AICTE approved institutes and receiving fellowship under AICTE QIP scheme. Admissions will be carried out as per the University norms.

For Fee structure refer web site refer https://www.coeptech.ac.in/administration/university-sections/ac-section/fees-structure/.

11. Teaching Assistantship (TA)/Research Assistantship (RA)/ Scholarships in COEP Tech University

	Title of the Project	Research Area	Department	No. research scholars to be funded	Sponsoring Authority	Max. Permissible stipend per month	Name of Principle Investigator	Duration in years
1	Actionable Image insights with deep learning	Data Analysis	Computer	1	Pattern Technologies, India	Rs. 50,000/-	Dr. (Mrs) V. Z. Aattar	3
2	Centre of Excellence in Industrial product design	Industrial Product Design	Mfg. Engg. and Industrial Mgmt.	2	Govt of Maharashtra	Rs. 30,000/-	Dr. S. S. Anasane	3
3	Integrated system of steel powder synthesis using plasma assisted atomization method for indigenously developed metal 3D printer using selective laser sintering (SLS) technique	Additive Manufacturing	Mfg. Engg. and Industrial Mgmt.	1*	DST	Rs. 25,000/- (JRF)	Dr. (Mrs) A. V. Mulay	2 * (JRF)
4	High Performance Implementation of Predictive Controller for Directed Energy System	Control System, FPGA, Embedded Systems	Instrumentation and Control	1	DRDO	Rs. 42,000/-	Dr. D.N. Sonawane	3
5	Yet to be Finalized	Energy System	Department of Mechanical and Department of Metallurgy	2	Vertiv	Rs. 35,000/-	HoD Mechanical and Metallurgy	Waiting for Approval
6	Shall be finalized at department level	Refer Sr. No. 1 of Information Brochure	Across all circuit Departments	3	Finolex Group	Rs. 30,000/-	All Department Heads	3
7	Yet to be Finalized	Automated Driving system	Dept. of E& TC, Instrumentation, and Electrical Engineering	2	Faurecia India Pvt. Ltd.	Rs. 35,000/-	Hod of E& TC, Instrumentation, and Electrical Engineering	Waiting for Approval
8	Shall be finalized at department level	Refer Sr. No. 1 of Information Brochure	Across all Departments	8	COEP Tech, University	Rs. 35,000/-	All Department Heads	3

*Note:

1. The TA/RA ships will be provided only on the availability of funds from the funding agency.

2. The stipend may vary depending on the directions issued by the funding agency from time to time or availability of funds.

3. The research scholars will be eligible for the above funding based on his/her performance and subject to recommendations by the committee for providing such funding.

4. Eligible students may also get funding/scholarship through different funding agencies like various Govt. agencies (NDF/CSIR/UGC/DAE/DST/BARC)/ BARTI/ SAARTHI /JYOTI /Semi Govt. schemes/Industries.

12. General Instructions:

For detailed information on rules & regulations, syllabus, criteria for exemption in RPET & schedules, Click the URL mentioned below –

https://www.coeptech.ac.in/admission/ph-d/

In case of queries related to seats available as per the category in respective departments, the candidate can contact the respective departmental PhD coordinators as mentioned in given URL –
https://www.coeptech.ac.in/admission/ph-d/

- In case of any grievance or dispute, the decision of the Vice Chancellor, COEP Technological University, Pune is final & binding.

- It is the responsibility of the applicant to fulfil eligibility conditions & fulfil admission compliance. If candidate found to have submitted falsified information will be disqualified at any other stage and in such case, fees paid will not be refunded.

- Candidates who are in the final year of the qualifying examination of the course are allowed to apply for the RPET. However, the admission of such candidates is subject to their passing the qualifying examination.

- Admission to any program does not guarantee a hostel facility.

- For the current year admissions financial support, like a scholarship, fellowship, etc. COEP Technological University has an independent procedure for offering such benefits.

- It is the responsibility of the applicant to fulfil eligibility conditions & comply with the admission requirements. If, at any stage, it is noticed that the candidate or important material facts have made a false claim have been concealed and / or the candidate is not eligible, his candidature shall be liable for cancellation at any stage.

- *Incomplete applications* **or** *applications without uploading documents* **or** *applications without required fee & fee receipt* **or** *applications submitted after the due date*, will be rejected without assigning any reason. The COEP Technological University will not entertain any correspondence in this regard.

- Before filling out the application, please check the vacancy positions for admission displayed on the website.

- Results disclosed for the candidates at RPET & interview stages will be stated as Qualified or Not Qualified, which will be declared on the website.

- RPET exam seating arrangements and time schedule will be displayed at the COEP Tech University website. Therefore, candidates are requested to visit the University website for regular updates.

  For any general query, contact: phdadmission@coeptech.ac.in

Appendix –I

List of Documents to be attached along with application form

Attested photocopies of following documents/certificates should be attached with the application form at the time of submission. If a candidate fails to submit applicable documents/certificates along with application form, he/she will not be shortlisted for Ph. D. admission 2024-25.

Sr. No.	Type of Candidate	Copies of documents to be produced along with Application Form for Admission
1.	**All Candidates**	1. Graduation degree certificate 2. Final year marks list / grade sheet 3. Post graduate degree certificate 4. Post graduate Final year marks list / grade sheet 5. Receipt of application processing Fee 6. Statement of purpose from the candidate (one page justifying the research area)
2.	**Nationality Certificate**	In lieu of this "*Certificate of Indian Nationality*" following Certificates/Documents will also be acceptable- 1. Indian Passport in the name of the Candidate, issued by appropriate authorities. 2. The School Leaving Certificate indicating the Nationality of the Candidate as 'Indian'. 3. Birth Certificate of the Candidate indicating the Place of birth of the Candidate is within India.
3.	**Backward class Candidates belonging to S.C. / S.T.**	1. Caste/Tribe certificate 2. Caste/Tribe validity certificate
4.	**Backward class Candidates belonging to VJ/DT-NT(A)/ NT(B) / NT(C) / NT(D) /O.B.C/ SBC/SEBC**	1. Caste certificate 2. Caste validity certificate 3. Non creamy layer certificate @ valid up to 31st March 2025.
5.	**Persons with Disability (if applicable):**	The candidate claiming to be physically handicapped shall produce a certificate from the Director, All India Institute of Physically Handicapped, Mumbai or Dean/Civil Surgeon of the Government / CIVIL HOSPITALS normally located at the District Headquarters, regarding his or her physical disability, & ability to undergo all parts of syllabus for the normal course. Candidates suffering from Dyslexia, Dysgraphica & Dyscalculia are required to produce certificate issued by the 'Learning Disability Clinic, Lokmanya Tilak Municipal General Hospital, Sion, Mumbai-22.
6.	**Economically Weaker Section (EWS) Candidate**	In addition to the documents mentioned in Sr. No. 1 above, Eligibility Certificate for Economically Weaker Section (Appendix-V) valid for 2024-25 सामान्य प्रशासन विभाग शासन निर्णय क्रमांक राआधो/४०१९ प्र.क्र. ३१/१६ अ, दिनांक ३१.०५.२०२१ आर्थिक दृष्ट्या दुर्बल घटकासाठी विहित केलेल्या आरक्षणाचा लाभ घेण्यासाठी पात्रतेसाठीचे प्रमाणपत्र (GR Code २०२१०५३११२५०५९९४०७)
7.	**Full Time Sponsored Candidate**	Employer's No objection letter for joining PhD program (Appendix-II) Employer's Sponsorship letter for full time candidates (Appendix-III)

9.	**External Candidate**	Employer's No objection letter for external sponsored Candidate (Appendix-IV)
10.	**Non Association undertaking**	Undertaking of non-association with any organisation as on date. (Appendix-VI)
10.	**Foreign Candidate**	Refer (Appendix-VII) and send the applicable document on email.
11.	**Other documents as applicable**	Proof of Exemption for Written test
		Statement of purpose from the candidate (one page justifying the research area) (Appendix-X)
		Copy of first page of research papers published in journal / conferences

Appendix –II

Employer's No Objection Letter for joining PhD Program

(This should be typed on a letterhead of the sponsoring organisation)

To

The Vice Chancellor,

COEP Technological University,

Pune – 411 005.

Sub: Relieving an employee on Study Leave

Dear Sir/Madam,

We hereby relieve Mr./Mrs./Ms. …………………………………………………an employee of this institute on full/half/no pay leave for joining Ph.D. Program at COEP Technological University, Pune for a period of… .... years (at least three years).

Signature of Head of the Institute & Seal of the Institute

Appendix –III

Employer's Sponsorship Letter for joining the PhD Program

(This should be typed on letterhead of the sponsoring organization)

To

The Vice Chancellor,

COEP Technological University,

Pune – 411 005.

Sub: Sponsoring of an Employee for Ph.D. Program

Dear Sir/Madam,

We hereby sponsor the candidature of Mr./Mrs./Ms. ………………………………………………… who is an employee in our organization, for joining Ph.D. Program in ………………………………… at the ………………....Department.,…………………………… School your University as a regular candidate

We shall bear the total expenses of his/her studies. We shall fully relieve him/her of his/her duties in the organization during the entire period of the Ph.D. Program to enable him/her to devote full-time to the studies.

Signature & seal of the Sponsoring Authority

Appendix –IV

Employer's No Objection Letter for the External Candidates

...……………………………………………………….(Name of candidate) is working with ………………………………………… (Name of Institute) as………………… (Designation).

If ……………………………………………… (Name of candidate) is admitted in ………………….. ……………………. (Name of Dept/School) at COEP Technological University, Pune - 411005, Maharashtra, India & as a part of Ph.D. Program, he/she will be allowed to complete his/her Ph.D. course work.

…………………………………………………... (Name of the Institute) has No Objection in ……………………………... (Name of candidate) joining the Ph.D. Program at COEP Technological University, Pune - 411005, Maharashtra, India.

Name & Signature Principal/Director/Concerned Industry Authority

Date:

Place:

Appendix-V

(For candidate claiming seats reserved for Economically Weaker Section Candidates)

सामान्य प्रशासन विभाग, शासन निर्णय क्र.राआधो ४०१९/प्र.क्र.३१/१६-अ, दि . ३१/०५/२०२१ सोबतचे सहपत्र

परिशिष्ट – अ
महाराष्ट्र शासन

प्रमाणपत्र क्र.

<div style="border:1px solid;">फोटो</div>

वर्ष _____करीता ग्राह्य
आर्थिकदृष्टया दुर्बल घटकाच्या पात्रतेसाठी प्रमाणपत्र
सामान्य प्रशासन विभाग, शासन निर्णय क्र. राआधो ४०१९/प्र.क्र.३१/१६ अ, दिनांक ३१/०५/२०२१ अन्वये
(आर्थिकदृष्टया दुर्बल घटकासाठी विहित केलेल्या १०% आरक्षणाचा लाभ घेण्यासाठी)

प्रमाणित करण्यात येते की, श्री/श्रीमती/कुमारी ------------------------------------ श्री/श्रीमती------------------------------- ------- यांचा/यांची मुलगा/मुलगी गाव/शहर ------------तालुका ------------------जिल्हा/विभाग -------------------- -- महाराष्ट्राचे रहिवासी आहेत. तो/ती ------------ जातीचे असून जात /पोटजात/ वर्ग चे असून सदर जात महाराष्ट्र राज्य लोकसेवा (अनुसूचित जाती, अनुसूचित जमाती, निरधीसूचित जमाती (वि.जा.) भटक्या जमाती (भ.ज.), विशेष मागास प्रवर्ग (वि.मा.प्र) आणि इतर मागास प्रवर्ग (इ.मा.व) यांच्या साठी आरक्षण) अधिनियम,२००१ (सन २००४ चा महाराष्ट्र अधिनियम८) या मध्ये नमूद केलेल्या प्रवर्गांतर्गत होत नाही.

महाराष्ट्र शासन, सामान्य प्रशासन विभागाचा शासन निर्णय क्र. राआधो ४०१९/प्र.क्र.३१/१६ अ, दिनांक १२ फेब्रुवारी २०१९ अन्वये त्याच्या/तिच्या कुटुंबाचे श्रोतांचे एकत्रित वार्षिक उत्पन्न रु. ------------------/- असून, सदर उत्पन्न रु.८,००,०००/- पेक्षा कमी आहे. त्यामुळे असे प्रमाणित करण्यात येत आहे की, तो/ ती यांचा आर्थिकदृष्टया दुर्बल घटकामध्ये समावेश होतो.

सक्षम प्राधिकारी /तहसिलदार

ठिकाण: स्वाक्षरी :
दिनांक: नाव   :
                   (शिक्का)   पदनाम :

हे प्रमाणपत्र अर्जकर्त्याने सादर केलेल्या खालील कागदपत्र/पुरावे यांच्या आधारावर निर्गमित करण्यात येत आहे.

१.
२.
३.
(टिप: सामान्य प्रशासन विभाग, शासन निर्णय क्र.राआधो ४०१९/प्र.क्र.३१/१६-अ, दि.१२/०२/२०१९,नुसार आर्थिक दुर्बल घटकासाठीच्या आरक्षणाचा लाभ घेण्यासाठी पात्रता प्रमाणपत्र देण्यासाठी सक्षम प्राधिकारी म्हणून तहसिलदार यांना घोषित करण्यात आले आहे.)

Appendix –VI

Undertaking of Non-association with any Organization as on date

Mr. /Ms./ ………………………………………………….(Name of candidate have work experience of ………….…………… years in the domain of ………………………………….…………… …….………………………….

I ……………………………………………… (Name of candidate) am submitting application for admission to Ph.D. program (Part-time) in ……………………………….…………………………….. …………………………………………. (Name of Dept / School) at COEP Technological University, Pune - 411005, Maharashtra, India.

In view of this application submission, I ……………………………… …………………………………………………….……………………………. (Name of candidate) hereby undertake the following.

1. I am NOT associated with any organization here in India or Abroad in as actual or virtual full-time employee.
2. I am aware that either my admission to the Ph.D. program will be cancelled or Ph.D. degree will be invalidated, if my association as mentioned above during the Ph.D. ongoing period gets discovered by any means, at anytime & anywhere.

Name of the candidate & Signature

Date:

Place:

Appendix-VII

Documents required for FN/OCI/PIO/CIWGC/NRI candidates

1	Foreign nationals / Foreign Students	1. Eligibility Certificate from the Association of Indian Universities, New Delhi (AIU) if candidate passed Qualifying examination from abroad. 2. Passport of the Candidate. 3. Affidavit of candidate/Parent disclosing his full identity i.e. full name, age, residence, occupation, relationship with candidate duly signed by the Candidate/parents. 4. Proof of residence i.e. Driving Licence or Telephone Bill of candidate 5. Statement of Marks or Certificate of Passing SSC / Equivalent Examination. 6. Statement of Marks or Certificate of Passing HSC / Equivalent Examination. 7. Statement of Marks or Certificate of Passing Qualifying / Equivalent Examination
2	Persons of Indian Origin	1. Eligibility Certificate from the Association of Indian Universities, New Delhi (AIU) if candidate passed Qualifying examination from abroad. 2. Passport of the Candidate. 3. PIO / OCI Card. 4. Affidavit of candidate/Parent disclosing his full identity i.e. full name, age, residence, occupation, relationship with candidate duly signed by the Candidate/parents. 5. Proof of residence i.e. Driving Licence, Telephone Bill, Property Tax copy, IT return copy of sponsor 6. Statement of Marks or Certificate of Passing SSC / Equivalent Examination. 7. Statement of Marks or Certificate of Passing HSC / Equivalent Examination 8. Statement of Marks or Certificate of Passing Qualifying / Equivalent Examination.
3	Children of Indian Workers in Gulf Countries (CIWGC)	1. CIWGC Certificate of the Candidate OR of his/her Mother or Father 2. Affidavit of candidate/Parents disclosing his full identity i.e. full name, age, residence, occupation, relationship with candidate duly signed by the Candidate/parents. 3. Passport, Nationality Certificate of Parent. 4. Residence of parent in Gulf Countries, Valid VISA of Parent 5. Work Permit or Letter from the Employer on Company Letterhead. 6. Proof of residence i.e. Driving Licence, Telephone Bill, Property Tax copy, IT return copy of Parent 7. Proof of residence showing minimum 182 days of stay of Parent in Gulf Countries for the academic year of admission, prior to the admission date 8. True copy of Gulf bank account passbook (copies of main page indicating bank name & address, Parent name & address, with entries of last preceding 6 months prior to admission) 9. Eligibility Certificate from the Association of Indian Universities, New Delhi (AIU) if candidate passed Qualifying examination from abroad.

		10. Statement of Marks or Certificate of Passing SSC / Equivalent Examination. 11. Statement of Marks or Certificate of Passing HSC / Equivalent Examination. 12. Statement of Marks or Certificate of Passing Qualifying / Equivalent Examination
4	Non Resident Indian	1. NRI Certificate of the Candidate OR of his/her Mother or Father OR the real brother/real sister ordinarily residing abroad OR NRI certificate of the persons having blood relation with the student who consider such student as 'Ward' viz-real brother/sister of father OR real brother/sister of Mother OR father/mother of father OR father/mother of Mother OR 1st degree paternal/maternal cousins, ordinarily residing abroad and should have looked after the candidate as guardian with documentary evidence & affidavit in support of the aforesaid facts. Parents CDC (Continuous Discharge certificate) if claimant is Merchant Navy employee. 2. Affidavit of candidate/sponsor disclosing his full identity i.e. full name, age, residence, occupation, relationship with candidate duly signed by the Candidate/parents/sponsor. 3. Passport, Nationality Certificate of sponsor 4. Residence of NRI, Valid VISA of sponsor 5. Proof of residence i.e. Driving Licence, Telephone Bill, Property Tax copy, IT return copy of sponsor 6. Proof of residence showing minimum 182 days of stay of sponsor in abroad for the academic year of admission, prior to the admission date 7. True copy of foreign bank account passbook (copies of main page indicating bank name & address, sponsor name & address, with entries of last preceding 6 months prior to admission) 8. Affidavit of family chart duly signed by sponsor making clear relationship 9. Leaving certificates, Birth extracts, mark sheets, PAN Card, Passport, Marriage Certificate of all members shown on family tree/chart. 10. Eligibility Certificate from the Association of Indian Universities, New Delhi (AIU) if candidate passed Qualifying examination from abroad. 11. Statement of Marks or Certificate of Passing SSC / Equivalent Examination. 12. Statement of Marks or Certificate of Passing HSC / Equivalent Examination 13. Statement of Marks or Certificate of Passing Qualifying / Equivalent Examination

Appendix-VIII

Steps to be followed for making online payment

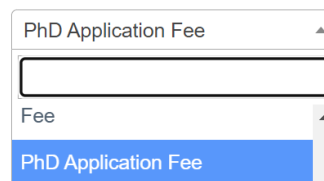|	
Step 1	**Go to the mentioned link for SBI-Collect:** **https://www.onlinesbi.sbi/sbicollect/icollecthome.htm**
Step 2	**Select Category** **"Educational Institutions"** Educational Institutions
Step 3	Write **"COEP Technological University"** in the search tab. Select Payee **Category:** Educational Institutions Search for Educational Institutions
Step 4 a.	After Selecting the institute name, in *'Enter Payment'* details**: Payment Category** as **PhD Application Fee.** **Payment Category***: PhD Application Fee **Name** * Fee PhD Application Fee
Step 4 b.	Fill in your details in the tab. In the next tab, Verify Payment details. After verification of your details Complete your payment.
Step 5	After Payment of the fees, select the Print Receipt option and save the pdf file. Use this pdf-file for online submission purpose.

Appendix –IX

COEP Technological University Pune

Syllabus for Ph.D. (RPET) Entrance Exam

PAPER-I

Foundation of Research: Meaning, Objectives, Motivation, Utility. Concept of theory, empiricism, deductive and inductive theory, Characteristics of scientific method - understanding the language of research - Concept, Construct, definition, Variable. Research Process,

Problem Identification & Formulation: Definition and formulating the research problem, Necessity of defining the problem, Importance of literature review in defining a problem, Research Question - Investigation Question - Measurement Issues – Hypothesis- Qualities of a good hypothesis - Null hypothesis & Alternative Hypothesis. Hypothesis Testing - Logic & importance

Research Design: Concept and Importance in Research - Features of a good research design - Exploratory Research Design - Concept, Types and uses, Descriptive Research Design - concept, types and uses. Experimental Design - Concept of Independent & Dependent variables.

Qualitative and Quantitative Research: Qualitative - Quantitative Research - Concept of measurement, causality, generalization, replication. Merging the two approaches.

Data Collection and analysis: Execution of the research - Observation and Collection of data - Methods of data collection, hypothesis-testing - Generalization and Interpretation.

Measurement: Concept of measurement - what is measured? Problem in measurement in research - Validity and Reliability. Levels of measurement - Nominal, Ordinal, Interval, Ratio.

Sampling: Concept of Statistical population, Sample, Sampling Frame, Sampling Error, Sample size, Non Response. Characteristics of a good sample. Probability Sample - Simple Random Sample, Systematic Sample, Stratified Random Sample & Multi-stage sampling. Determining size of the sample - Practical considerations in sampling and sample size.

Data Analysis: Data Preparation-Univariate analysis (frequency tables, bar charts, pie charts, percentages), Bivariate analysis - Cross tabulations.

Interpretation of Data and Paper Writing: Layout of a Research Paper, Journals in Engineering/Technology / Sciences/Humanities and Planning, Impact factor of journals, When and where to publish? Ethical issues related to publishing, Plagiarism and Self-Plagiarism. Meaning of H Index and I 10 Index. Intellectual Property Rights, Innovations.

Reasoning and Mental ability: Analogy, Classification, Series, Coding-Decoding, Direction Sense, Representation Through Venn Diagrams, Mathematical Operations, Arithmetical Reasoning, Inserting the Missing Character, Number, Ranking and Time Sequence Test, Eligibility Test, Representation through Venn-diagrams, Number & symbols ordering, Comprehension questions, Statement & assumptions, Statement & conclusions, Statement & actions

Books Recommended
- Research Methodology - C. R. Kothari
- Research Methodology: An Introduction - Stuart Melville and Wayne
- Practical Research Methods - Catherine Dawson

REFERENCES
- Garg, B. L., Karadia, R., Agarwal, F. and Agarwal, U. K., 2002. An introduction to Research Methodology, RBSA Publishers.
- Kothati , C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p.

- Sinha, S. C. and Dhiman, A. K., 2002. Research Methodology, Ess Ess Publications. 2 columns.
- Trochim, W. M. K., 2005. Research Methods: the concise knowledge base, Atomic Dog Publishing. 270p
- Wadehra, B. L. 2000. Law relating to patents, trade marks, copyright designs and geographical indications. Universal Law Publishing.

Additional reading
- Anthony, M., Graziano, A. M. and Raulin, M. L., 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.
- Carlos, C. M., 2000. Intellectual property rights, the WTO and developing countries: the TRIPS agreement and policy options. Zed Books, New York.
- Coley, S. M. and Scheinberg, C. A., 1990, "Proposal Writing", Sage Publications.
- Day, R. A., 1992. How to Write and Publish a Scientific Paper, Cambridge University Press.
- Fink, A., 2009. Conducting Research Literature Reviews: From the Internet to Paper. Sage Publications
- Leedy, P. D. and Ormrod, J. E., 2004 Practical Research: Planning and Design, Prentice Hall.
- Satarkar, S. V., 2000. Intellectual property rights and Copy right. Ess Publications.

PAPER-II

Logic and Set Theory : Sets, operations on sets, functions, pigeonhole principle, well-ordering principle, principle of mathematical induction, number system, fundamental theorem of arithmetic, GCD and LCM of numbers, polynomials, modular arithmetic, reasoning, deductive arguments, Venn diagrams

Analytical Geometry : Equations of straight line, circles, conics, plane, space curves, tangent and normals to curves.

Basic Algebra : Quadratic equations, their roots and properties, permutation and combinations and related formuale, binomial theorem.

Matrices and Determinant : Types of matrices, algebra of matrices, properties of matrix multiplication, inverse of a matrix, concept of rank, system of linear equations, Cramers's rule. Determinants, minors and cofactors and their properties, solutions of a linear systems of equations, condition of consistency.

Vector Algebra : Representation of vectors, coplanar and non-coplanar vectors, resultant of two vectors, angle between two vectors, scalar product, dot product, gradient, curl and divergence.

Complex Numbers : Algebra of complex numbers, square root of a complex number, geometrical representation of a complex number, polar form, De Movier's theorem, roots of unity, Cauchy- Riemann equations.

Statistics and Probability : Random experiment, sample space, types of events, concept of probability, independent events, conditional probability, Baye's theorem, mean, mode, variance.

Books Recommended
- A Foundation Course in Mathematics, Ajit Kumar, S. Kumeresan and Bhaba Kumar Sarma, Narosa Publication House
- Elementary Number Theory, David M. Burton, Tata McGraw Hill, Sixth Edition.
- Complex Variables and Applications, James Ward Brown and Ruel V. Churchill, Mc-Graw Hill, Seventh Edition.
- Introduction to Real Analysis by R.G. Bartle and D.R. Sherbert, John Wiley and Sons Inc, Fourth Edition.
- Analytic Geometry in Two and Three Dimensions : Von Steuben
- Analytical Solid Geometry: Shantinarayan; S. Chand and Company Ltd, New Delhi, 1998.
- Introduction to Real Analysis by R.G. Bartle and D.R. Sherbert, John Wiley and Sons, Inc., Fourth Edition.

Appendix –X

COEP Technological University Pune

STATEMENT OF PURPOSE

The Statement of Purpose (SOP) is your opportunity to communicate your thoughts and feelings about pursuing research at COEP Tech Pune, as well as your preparation for this endeavor. Please provide a brief overview of any past projects or research work you have completed. Keep your response to 500–600 words. This personal SOP will assist the admission committee in evaluating your application.

1. **Name:** _____

2. **Program of Study (Ph.D.):** _____

3. **Department:** _____

Date: _____   **Signature with Name**