Standard Operating Procedure (SOP) for the CHANAKYA Fellowship

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5.0			

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SOP for the CHANAKYA Fellowship

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Executive Summary

The present document provides the detailed guidelines and rules of the procedure for the Comprehensive and Holistic Advancement of National Knowledge Yield and Analytics (CHANAKYA) fellowship. This fellowship is offered by The National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS) through TIH-IoT to motivated key learners/researchers/teachers across all levels in the world/India who want to work in the area of IoT and IoE.

Along with the objectives and deliverables to NM-ICPS, this document describes the guidelines for awarding fellowships in two major categories namely Mentored and Individual. Mentored category is focused mainly on students whereas an Individual category is focused on faculty members across PAN India. In the Mentored category, the fellowship will be awarded to the UG, PG, PhD and Post-Doctoral students whereas in the Individual category, the fellowship will be awarded to the faculty members and chair professors. This document acts as a guide that can be referred to for all aspects of the CHANAKYA fellowship at a broader level. The SOP is prepared based on the inputs from NM-ICPS detailed project report and tripartite agreement between the TIH-IoT, the IITB, and the DST.

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1 Introduction

The CPS and associated streams and on all aspects of ICPS research in India will be coordinated under the umbrella of NM-ICPS with a broader scope of Translational Research, Technology Development, HRD, Start-up development. The Mission would institute research through academic collaborations and foster in-depth investigations to understand the processes and phenomena that are in operation leading to the development of CPS applications. A dedicated group of scientists, in collaboration with several other national academic and research institutions of excellence, associated with industry, would carry out major research programmes under directed research and extramural funding mechanisms to meet the requirements of Ministries/Departments/ Industry. To achieve the mission one of the pillars is the research on these topics by providing the fellowship to researchers in academia and industry and thus the concept of the CHANAKYA fellowship is evolved.

2 Objective

The CHANAKYA fellowship is provided to meet the following broad level objectives.

- Create a pool of trained professionals in Cyber Physical Systems (CPS) domain to be problem-solvers or turn entrepreneurs
- Provide support for motivated young researchers in the area of CPS and groom them as an independent researcher
- Initiate Curriculum for UG Students in CPS and allied areas
- Provide a platform for PG students to work on a real problem of industry and solve it using CPS
- Provide support for Doctoral candidates to do an in-depth analysis in CPS by applying independent methodologies of scientific research and creating new scientific knowledge/ technology solutions in CPS
- Provide support to academician/industry professionals heavily engaged in research and teaching in CPS or related areas and complementing the ongoing work in the Host Institution in the areas of CPS Domain

3 Fellowship Details

3.1 Expected Outcome of Fellowship

Following outcomes are expected with these fellowships

- New deployable products/technology to different industries
- Technology commercialization
- Develop new application areas for IoT
- Exposure of Entrepreneurship to students
- Technology solutions for India
- New products/ processes
- Manpower of high order skills
- Intellectual property generation

3.2 Potential areas of research interest for the TIH IoT

Application Areas	Technology Areas
● Agriculture ● Healthcare ● Industrial IoT ● Security Systems ● Smart Education ● Smart Cities ● Other relevant areas	● Sensors ● Network and communication ● Cloud Computing ● Secured Edge Computing ● Smart Actuator System ● Software-based projects (IoT Platform and applications) ● Security

3.3 Summary of Fellowship details and NM-ICPS Targets

The table below shows the summary of the fellowship details and NM-ICPS targets for 5 years. Furthermore, duration, support and qualification criteria is also mentioned in the table for ready reference.
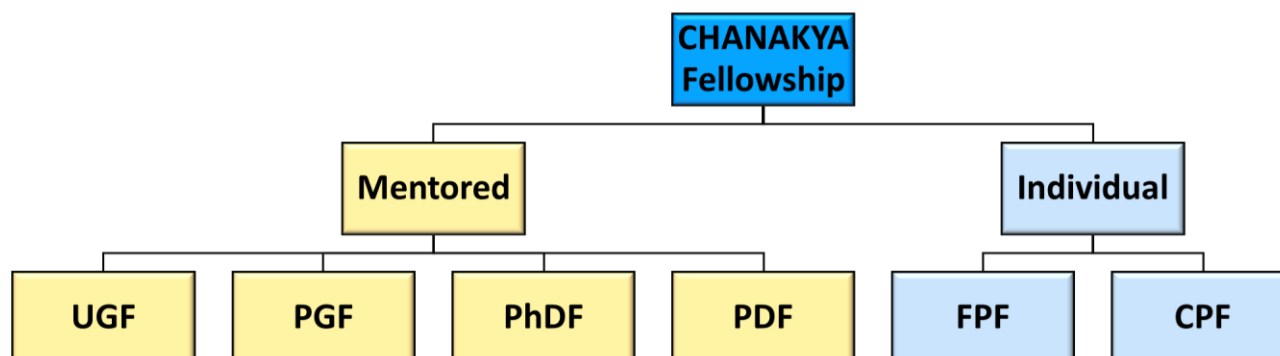
Table 1: The details of the fellowship and NM-ICPS Targets for 5 years

Sr. No.	Fellowship Type	No. of fellowships for 5 years	Fellowship Amount	Duration of Fellowship	Qualification Criterion
1	Under Graduate Fellowship (CHANAKYA - UGF)	340	INR 10,000 /month A maximum of INR 20,000/- per student towards in the form of a Project Development Fund will be provided (not to be utilized for Capital Expenditure).	Upto 10 months	Students should have completed the first/second (engineering/science) year program and have at least 10 months left in their respective course at the time of the internship
2	Post Graduate Fellowship (CHANAKYA - PGF)	62	INR 12,400 /month A maximum of INR 50,000/- per student per year, towards in the form of a Project Development Fund will be provided (not to be utilized for Capital Expenditure).	Upto 2 years	Students admitted to PG programs in CPS or related areas and having a valid GATE/JAM score, at different technical institutions like IITs, NITs, and other AICTE-approved engineering institutions. Dual degree students from IITs without GATE score are eligible for PG fellowship
3	Doctoral Fellowship (CHANAKYA-PhDF)	5	· INR 31,000/month for 1st and 2nd year · INR 35,000/month for 3rd and 4th year · HRA at the rate of 24% of the fellowship amount. · Fellowship can be extended up to 5th year to INR 35,000/month based on committee recommendation A maximum of INR 2,00,000/- (Two Lakhs) per project towards in the form of a Project Development Fund will be provided (not to be utilized for Capital Expenditure).	4 years extendable to 5th year	Students admitted to PhD programmes in CPS or related areas preferably in IoT, at different technical institutions like IITs, NITs and other AICTE approved engineering institutions.
4	Post-Doctoral Fellowship (CHANAKYA-PDF)	5	• The honorarium of Rs. 80,600/- per month (Rs. 65,000/- + 24% HRA) • Contingency grant of Rs. 1,00,000/- per annum • The support for travel for attending the conferences/workshops.	2 to 3 years.	PhD with <2years of experience. Research scholars who have submitted their thesis. Minimum education qualification is PhD in subjects related to the Cyber Physical Systems preferably in IoT
5	Faculty Professor Fellowship (CHANAKYA-FPF)	6	• The honorarium of Rs. 30,000/- per month in addition to regular income and an annual contingency grant of Rs.1,00,000/-. • The support for travel for attending the conferences/workshops.	3 years	Assistant Professor/Associate Professor/ Professor
6	Chair Professor Fellowship (CHANAKYA-CPF)	6	•The honorarium of Rs. 30,000/- per month in addition to regular income and an annual contingency grant of Rs. 1,50,000/-. • One RA (project support staff) at Rs. 30,000/- per month (Inclusive of HRA) •The support for travel for attending the meetings/conferences/workshops.	3 years	Associate Professor or Professor, retired Professors or a person with rich R&D experience from industry, faculty from other countries.

4 Types of Fellowship

The CHANAKYA fellowship is divided into two major categories: Mentored and Individual. Mentored category is focused mainly on students whereas an Individual category is focused on faculty members/industry professional. The chart below shows the details of the CHANAKYA fellowship categories.

UGF – Undergraduate Fellowship

PGF – Postgraduate Fellowship

PhDF – PhD Fellowship

PDF – Post Doctoral Fellowship

FPF – Faculty Professor Fellowship

PDF – Chair Professor Fellowship

4.1 Mentored – Student Fellowship (UG, PG, PhD and PDF)

Comprehensive and Holistic Advancement of National Knowledge Yield and Analytics (CHANAKYA) is an initiative under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) with a focus on human resource development. TIH-IoT CHANAKYA Group (UG, PG, PhD and PDF) Fellowships are primarily aimed at encouraging in-depth analysis and enrich knowledge in CPS, creating new scientific knowledge/ technology solutions and solving problems of industry.

4.1.1 Eligibility Criteria

This section provides the details of the eligibility criteria for the CHANAKYA fellowship for students. Following are common requirements to be fulfilled by the candidate and Host Institution to be eligible for the fellowship:

A. Undergraduate (UG):

a)   Students can be of any discipline of engineering/science of undergraduate course to be eligible for the internship.

b)   Students should have completed the first/second (engineering/science) year program and have at least 10 months left in their respective course at the time of sanction.

c)   Students should have a minimum Cumulative Grade Point Average (CGPA) /Cumulative Performance Index (CPI) of 6.0 on the scale of 0-10; or a minimum of 60% marks in aggregate, till immediate previous semester/year, at the time of the start of internship/fellowship.

d)   Students should not be receiving any other government funded scholarship/ grants.

B. Postgraduate (PG):

a)   Students admitted to PG program in CPS or related areas at IITs, NITs and other AICTE/UGC approved institutions and having a valid GATE/JAM score. Dual degree students from IITs without GATE score are eligible for PG fellowship.

b)   The student should have a minimum Cumulative Grade Point Average (CGPA)/ Cumulative Performance Index (CPI) of 6.0 on the scale of 0-10 or a minimum of 60%marks in aggregate in the previous degree.

c)   Students should not be receiving any other Government funded fellowship / grants.

C. Doctoral (PhD):

a)   Students admitted to PhD programmes in CPS or related areas, at different technical institutions like IITs, NITs and other AICTE/UGC approved engineering institutions.

b) The student must have a minimum Cumulative Grade Point Average (CGPA)/ Cumulative Performance Index (CPI) of 6.0 on the scale of 0-10or a minimum of 60% marks in aggregate in the previous degree.

c) Students should not be receiving any other government funded fellowship / grants.

D. Post-Doctoral (PDF):

a) The applicant should have obtained PhD degree from UGC/AICTE approved Indian universities/ engineering institutes and demonstrated very good experience of research, publications in reputed journals and conferences, patents, laboratory/course development and other recognized relevant professional activities.

b) Applicant may be fresh PhD or PhD with less than 2 years of experience or research scholar who has submitted thesis and is awaiting examination.

c) PhD in subjects related to the Cyber Physical Systems preferably IoT.

d) The candidates should be preferably below 35 years of age.

e) A Post-Doctoral Fellow will have a faculty mentor whose area is closest to that of the PDF.

f) The applicant should not be receiving any other fellowship from any other Government sources.

g) The term of a Post-Doctoral Fellowship will be initially for 1 year which may be extended further for two years subject to outcome and performance

h) The fellowship for subsequent years will be based on performance. There will be periodic progress reviews.

i) Performance indicators will be commercialization of technology, high quality research publications, intellectual property (IP) generation, initiation of startup

j) The workplace for the Post-Doctoral Fellow will be TIH IoT office, inside IIT Bombay Campus

4.1.2 How to Apply

a) Applications will only be accepted through an application form.

b) The applicant must submit a Project Proposal they intend to pursue. The project proposal should be submitted in the prescribed format.

c) The applicant should submit the following:

   1. Recent CV of the Applicant

   2. Statement of Purpose

   3. Recommendation letter from two referees

4.1.3 Selection Process

a) A review committee having experts in the domain of Cyber-Physical Systems from academia, and industry will select the Post-Doctoral Fellows through presentation.

b) The committee will recommend the selection based on prior research experience and future research plans. Six monthly progress will be evaluated by a committee and provide the recommendation.

4.1.4 Documents Required for Mentored Fellowship

1. Applicants need to submit the proposals under the registered guide (applicable to UG, PG and PhD students) with his/her host institute and submit a consent letter in a prescribed format. (Research proposal to be submitted along with details of guide)

2. Grantee to send the self-attested hard copy of following documents: -

   a) Degree certificate

      i.   UG- Degree certificate – BE/BTech/ BSc.

      ii. PG- Degree certificate: M.Sc./ME/MTech qualifying degree certificate.

   b) GATE/CSIR-NET examination – qualification certificate (Valid score is not necessary).

   c) Bonafide certificate from the college where admission for ME/ MTech/ MS has been secured.

   d) Resume in prescribed format.

   e) Research proposal in prescribed format.

   f) Undertaking form from candidate.

   g) Consent form from mentor

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4.2 Individual - Faculty and Chair Professor Fellowship

To honor and provide support and gain knowledge, and guidance in Research from the expertise in the domain of CPS, the Faculty and the Chair Professor Fellowship program are introduced by TIH IoT. The Faculty and Chair Professor Fellowship distinguished position for academia and for the industry professional having rich industrial experience. They are highly valued in academic circles due to the prestige attached to them on the one hand and to the contribution, the faculty makes during their tenure, on the other. Faculty from Centrally Funded Technical Institutes (CFTIs) and IITs, who have demonstrated excellence in research through technology development, patents, and publications in top-tier journals/conferences, in the broad domain of Cyber-Physical Systems are encouraged to apply for this fellowship program. These awards are meant for faculty who are interested in playing a leadership role in their areas of research and working closely with the TIH IoT.

4.2.1 Faculty Fellowship

This sub-section provides the details of CHANAKYA Faculty Fellowship:

4.2.2 Role & Responsibilities

- Technology Development - Significantly contribute to the technology/product development of the TIH IoT's outlined core and application-oriented technologies.
- Idea to Commercialization - Contribute to the increase of the TRL (Technology Readiness Level) for the commercialization of the idea.
- IPR Generation - Significantly contribute and support the generation of high-quality IP in the broad domain of Cyber-Physical Systems preferably IoT & IoE. It includes patents, publications, trademarks, design registrations, etc.

4.2.3 Eligibility Criteria

- The applicant should be in service at the time of application to this fellowship.
- The applicant should be an Indian national employed in institutions in India.
- The applicant should not be receiving any other fellowship from any other Government sources.

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- The applicant should be working as Assistant Professor/Associate Professor/ Professor level.
- The fellowship for subsequent years will be based on performance.

4.2.4 How to Apply

a) Applications will only be accepted through the application form.

b) The applicant must submit a Project Proposal they intend to pursue. The project proposal should be submitted in the prescribed format.

c) The applicant should submit the following:

1. Recent CV of the Applicant
2. Brief outline of Applicant's work, Statement of Purpose and how he/she fits into the role
3. Recommendation letter from two referees

4.2.5 Selection Process

a) A review committee having experts in the domain of Cyber-Physical Systems from academia, and industry will select the Post-Doctoral Fellows through presentation.

b) The committee will recommend the selection based on prior research experience and future research plans.

4.2.6 Chair Professor Fellowship

This sub-section provides the details of CHANAKYA Chair Professor Fellowship:

4.2.7 Role & Responsibilities

- Technology Leader - Play a leading role in the broad domain of Cyber-Physical Systems and work closely with the TIH IoT for the development of identified IoT Core Technologies and Application areas.
- Stakeholder Interaction - To propagate TIH-IoT in Academia, Government Departments, Research Centers Industries, etc by representing TIH IoT. To popularize TIH-IoT among the public.
- Translational Research Ecosystem - A Chair Professor Fellow will help in developing the Translational Research Ecosystem strategy for the TIH-IoT.

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- Idea Generator for CPS Policies and Programs - To provide innovative ideas for implementation of the Cyber-Physical Systems policies and programs.
- TIH Visibility - To participate in the conferences, and workshops and increase the visibility of TIH-IoT in such events.

4.2.8 Eligibility Criteria

- The position is open to Academicians and Industry experts of repute
- The applicant should be in service at the time of application to this fellowship (not applicable to retired person).
- The applicant should be an Indian national working in institutions in India.
- The applicant should not be receiving any other fellowship from any other Government sources.
- Anyone with a track record of an outstanding teacher or researcher in the rank of Associate Professor/Professor or a person with rich experience from industry, retired professors.
- NOC from the parent organization if the applicant is in service
- The fellowship for subsequent years will be based on performance as per delivering the responsibilities.

4.2.9 How to Apply

a) Applications will only be accepted through the application form
b) The applicant should submit the following:
   1. Recent CV of the Applicant
   2. Brief outline of Applicant's work, Statement of Purpose and how he/she fits into the role
   3. A review committee having experts in the domain of Cyber-Physical Systems from academia, and industry will select the Faculty and Chair Professor Fellows through interviews.

4.2.10 Selection Process

a) A review committee having experts in the domain of Cyber-Physical Systems from academia, and industry will select the Post-Doctoral Fellows through presentation.

b) The committee will recommend the selection based on prior research experience and future research plans.

4.2.11 Documents Required for Individual Fellowship

a) Recent CV of the Applicant
b) Brief outline of Applicant's work, Statement of Purpose and how he/she fits into the role
c) Statement of Purpose
d) Recommendation letter from two referees (Only for faculty fellowship)

4.3 Project Progress Review

4.3.1 Mentored Fellowship

- The responsibility of monitoring academic progress of all CHANAKYA student fellowships (UGF, PGF, PhDF) lies with the Host Institute as per the norms and rules for Host Institute whereas the responsibility of monitoring the progress of project lies with TIH-IoT.

- In case of individual projects, TIH-IoT will work with the faculty (called as Project Investigator, (PI) for the project deliverables.

- PIs have to submit progress reports and make presentations before TIH-IoT, as per the decided time schedule.

- TIH-IoT will suggest to the PI to modify the course of action, if the work progress doesn't match with the project proposal's expected deliverables.

- In case of the student-driven projects, the monitoring of the progress of project will be done by the mentor/technical staff and subsequently by the TIH-IoT.

4.3.2 Individual Fellowship

- The responsibility of monitoring academic progress of faculty and Chair Professor fellows lies with the lies with TIH-IoT.

- Fellows have to submit progress reports and make presentations before TIH-IoT, as per the decided time schedule.

- Six monthly progress review will be done for the faculty and chair professor fellows

by TIH IoT.

5 Responsibility Matrix

5.1 Responsibilities of TIH-IoT

- Funds will be disbursed to the Host Institute (applicable for individual and mentored fellowship except for the Industry Personnel/retired faculty where the disbursal will be to his personal account). The terms and conditions will be stated/conveyed in the sanction order.
- TIH-IoT will monitor the progress of the projects and provide suggestions if required
- The budget for consumables, contingency, national and international travel etc. for each fellowship will be included in the fellowship as per Table 1.

5.2 Responsibilities of Host Institute/Industry

5.2.1 Mentored Fellowship

- Host Institute will monitor academic progress of all CHANAKYA fellowships as per the norms and rules.
- Host Institute will take care of the eligibility criteria and funds disbursal as per the terms and conditions stated.

5.2.2 Individual Fellowship

- Host Institute/Industry will provide No Objection for receiving the CHANAKYA fellowship directly to the fellow.

Annexure I

A. Roles & Responsibilities:

1) Mentor/applicant and the student group shall carry out the activities of the project and conform to the specified objectives, outputs, milestones, and targets as stipulated in the project proposal submitted by you.

2) Mentor/applicant shall duly acknowledge the assistance by TIH-IoT while publishing or presenting in any manner the details of the project, its progress

or its success, by mentioning the TIH-IoT CHANAKYA Group (PhD, PG & UG) Fellowship Program, 2022-23 and the grant number.

3) The students, unless permitted by TIH-IoT in writing, shall not accept any other government fellowship/scholarship while they are in receipt of the TIH-IoT CHANAKYA Group (PhD, PG & UG) Fellowship of TIH-IoT.

4) Mentor/applicant shall submit the project progress report to TIH-IoT along with the financial status, in the prescribed format for the purpose of project monitoring whenever asked.

B. Verification of particulars:

1) The engagement of the students and faculty supervisor/mentor in TIH-IoT CHANAKYA Group Fellowship Program is substantially based on original and authentic information, testimonial, documents and undertaking disclosed/submitted by the faculty supervisor/mentor, which are required to be submitted before joining the fellowship or may be called upon to do so subsequently.

2) The TIH-IoT shall be within its right(s) to verify the genuineness/correctness of such information at any time now or in future. If it is found at any stage that the information provided is incorrect or some information is concealed/suppressed, then the grant and the engagement hereunder will be automatically cancelled.

C. Termination/Separation:

1) TIH-IoT CHANAKYA Group Fellowship shall expire after the approved project duration or completion of the project or completion of the degree of the PhD student, whichever is earlier or in the event it is terminated by TIH-IoT at its sole determination.

2) During the stipulated period, if the progress of the project or conduct or performance of students is found unsatisfactory, the grant shall be discontinued without any notice and without assigning any reason(s) thereof.

3) In the event of breach of any of the terms & conditions of grant,

   a) TIH-IoT also reserves the right to terminate TIH-IoT CHANAKYA Group Fellowship grant without giving any notice.

b) TIH-IoT (entirely at its discretion) also reserves the right to recover any monies/funds/damages that flow or result from such termination.

D. General Terms & Conditions:

1) TIH-IoT CHANAKYA Group (PhD, PG & UG) Fellowship Grant is non-transferrable in nature.

2) All the correspondence(s), communications by TIH-IoT herein after, shall be made either personally, through email or at the institute address given by you, at any one of the places at the discretion and convenience of TIH-IoT.

3) The students have been engaged as "TIH-IoT CHANAKYA fellow/intern" by the TIH-IoT under the CHANAKYA program funded by Department of Science and Technology under the NM-ICPS and therefore in addition to the terms of this Sanction letter, you shall also adhere to and abide by any rules, ordinances, guidelines, directions issued by DST from time to time.

4) Faculty mentor shall submit utilization certificate and audited statement of expenditure at the end of each financial year.

5) Subsequent release of grant under the project shall be considered based on the financial record submitted by you.

6) At the end of the project, you shall submit an audited statement of accounts of the entire grant received, countersigned by the finance officer of the institute. Unspent balance, if any, shall be refunded/returned to the following account: TIH Foundation for IoT & IoE Account No.: 039758371907, IFSC code: SBIN0001109.

7) The terms and conditions of this letter are strictly confidential and should be treated as privileged information between you and TIH-IoT.

8) Decision of the COO/CEO, TIH-IoT, shall be final and binding in case of any dispute(s)/difference(s) between yourself and TIH-IoT, concerning or relating to or arising out of your engagement and shall be subject to the exclusive jurisdiction of Mumbai.

9) In the case of any ambiguity or conflict or inconsistency between this sanction letter and any other previous communication between you and TIH-IoT on the same subject matter, the provisions of this sanction letter shall take precedence.

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10) You need to provide your acceptance of the terms and conditions as mentioned in this Sanction letter by returning the duplicate copy duly e-signed by you, to the TIH-IoT office (Email: chanakya-iot@tihiitb.org).