

Summary Report

About Department/Center/School:

RCGSIDM started its journey on 18th August in the year 2008 as a result of the joint initiative of the institute and Mr. Ranbir (Ron) Singh Gupta, an alumnus (1970 batch B.Arch) of this Institute. An endowment made through Ranbir and Chitra Gupta Foundation, it was a timely initiative taken to address the fast-growing infrastructural needs of the country. Large infrastructure projects require strong, interdisciplinary technical and management skills. It is of paramount interest to develop human resources with solid foundations in engineering, architecture, and management skills through academic programs. Indian Institute of Technology Kharagpur with its vantage position with regard to its existing faculty and academic programmes in these areas took the noble initiative to set-up RCGSIDM as the first infrastructure school in the IIT system. Later on this idea was borrowed by other IITs and IISc Bangalore.

1. Academic Programs (Range of Degrees and Disciplines):

- i) *M. Tech in Infrastructure Design and Management*
- ii) *Ph.D. in Infrastructure Design and Management.*

2. Major 4-5 Thrust Areas of Research:

- i) *Building management*
- ii) *Decision Modeling and Simulation*
- iii) *Facility planning*
- iv) *Infrastructure finance,*
- v) *Regulatory issues*
- vi) *Transportation Engineering.*

3. Curriculum and Courses & Teaching Environment

Items	Ratio/ Number	Items	Number/%
Teacher-student Ratio	1:1.5	Average No. of students motivated (%) to opt of careers Eng/ Tech. Sectors UG/PG/PhD	0 / 20 / 6
No. of Faculty members as on today	Core 0, Joint 5, Assoc. 17 Chair prof. 1	Average No. of students motivated (%) to opt of careers in Science sectors UG/PG/PhD	0/0/0
Average No. of Tutorial Assistants	6	No. of teaching labs	1
No. of UG/DD students	0 / 0	Average No. of students per experiments in core courses	Individual
No. of PG students/PhD students	31 / 6	No. of Students' workshops/`Tinkering` Labs	0
Average no. of tutors with more than 100 students	N/A	No. of new courses introduced	0
Average Students placements (%) (UG/DD/PG)	0 / 0 / 75	No. of New program introduced	0
No of major curriculum review in both UG & PG level	3	Undergraduate Vs PhD strength expressed as Percentage	N/A
No of UG lab (teaching labs) developed/set-ups	N/A	No of PG/research labs developed/new set up	0
No of E class rooms	1	No. of lab classes per week	4

Average No. of Course done per student for B. Tech/DD/M. Tech/Ph.D	0/0/18/4	No. of core/elective/seminar/projects subjects taken for B. Tech, DD, and M. Tech respectively	-- -- 8/5/3/2
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4. Research and Development & its Environment

Items	Number	Items	Number	Items	No.
Total No. of Publications in Journals (2008-13)	25	Average no. of citation per paper	---	No of large interdisciplinary research projects	---
Total No. of Publications in Conference & Symposium	23	Average Journal publication per year	5	Number of Int. conf./workshops attended by students	2
Total No of Books & e-books published	4	h-Index of the department since 2008/overall h-index in Scopus	----	No. of PDF hired in the Institute	0
Total No of Edited Conference Proceedings/book chapters	5	Number of papers with citation more that the average no. of citation of the Journals	---	No. of international Students as PhDs/PDFs	0
Total No. of Technology Developed/transferred	0/0	No. of recognitions & Awards, fellows etc to faculty/students (provide break up if necessary)	4/0	No. of International visiting researchers/adjunct faculty stayed here for at least a week	1
Total No. of Patents Filed/Obtained	0/0	Average Retention(%) of Young faculty for at least 10 years	N/A	No. of short courses/workshops /conf. organized with international participations	0
Total No. of Copyright Filed/Obtained	0/0	No. of Sponsored research Project /fund(lakh) generated from non-internal source	0/0	Average No. of PhD granted per year	First PhD in 2014
No. of Publications per Faculty/Masters/PhD students	19//<1 / <1	No. of Consultancy /fund (lakh) generated from non-internal source	1/ 88	Average No. of PhD Granted per year per faculty	---
No. of Publications per Faculty/Masters/PhD students in Top Ten Journals as Identified by the department	---	No of Internal and external Collaborations research papers/research projects/PhD students	----	Patent granted per faculty	0
Average No. of Citation per faculty per year	---	No of M. Tech students motivated into pursuing PhD/PhD graduates motivated to pursue career	20/1	Number of articles in collaborations with Ten countries*	4

		in Academics(abroad or IIT etc)			
Ranking of the department in terms of average citations per paper within the Institute	---	Ranking of the department in terms of total number of Journal publications within the Institute/publications per faculty	----	No of articles of the dept. contributing towards h-index of the Institute since 2008	----

5. External Stakeholder Engagement and others

Items	Number	Amount Lakh
No. of PhD/Master students' thesis funded by Industries	0/0	N/A
Total number of Industry sponsored projects and its income (Lakh)	1	88
No. of Curriculum Development Initiative for Industries	-	-
No of Technology transfer/adopted by Industry/Labs	0	N/A
No. of Nationally relevant research projects	0	N/A
No of Policy inputs/consultancies provided	1	88
No. of Research grant and seed money from internal savings of the Institute per young faculty of the department and its total fund	-	-
No. of Community Relevant projects	2	77

6. Vision for the Future (in brief):

(a) Departments/centers/schools should spell out its Mission and Vision Statements, (b) Plans for future to achieve the projected goals and (c) measures adopted towards above.

- *Mission of the School is to develop outstanding professionals capable of designing and delivering quality infrastructure projects efficiently and effectively with a comprehensive and fast-track approach.*
- *The vision of the School is to undertake Flagship Projects such as 'Future of Cities' which are Interdisciplinary in nature, with Students' participation in the projects : e.g. Future of Cities, Railway research. Undertake Large and Challenging problems, Develop International relations, Create of the school as a Centre of Excellence, Increase visibility to the industries through Advertisement.*

7. External peer review of the Dept./centre/schools (in brief):

(a) Date: 31 October, 2013

(b) Name of the Experts involved and their affiliations in short:

External Members

- *Mr. Ranbir Singh Gupta, Permanent Member, Chairman, SIGMA7 design group, New York,*
- *Mr. Dip K. Sen, Member, Vice-President & Head, Transportation SGB Infrastructure IC, Larsen and Toubro Ltd*
- *Mr. Vijay Varki, Uday Agnihotri Chair Professor of RCGSIDM*

(c) Overall recommendations of the peer review committee: Strengths, weaknesses, suggestions and comments

- *Faculty position needs to be improved; adjunct/ visiting / joint hire schemes may be considered. They can be selected from industry, other departments or retired faculties.*

- Restructure the overall course periodically with interdisciplinary specializations.
- Allocate one semester for specialization-based course works to create niche area.
- Courses should be market-driven, with more variation (2-credit system) and case study oriented subject.
- Obtain feedback from the industry on their requirement and restructure courses to suit the market requirement.
- L&T has joint programs with other IIT's. The school would Initiate L&T + IITKGP academic program in the similar pattern, including inviting Adjunct Faculty from L&T.
- Coverage of subject with Traditional and modern aspects.
- Introduce multi-disciplinary Design subjects such as Township projects.
- Undertake construction of additional space over the existing building, as an immediate measure (already initiated)

(d) Measures adopted/action taken at the department level to address the recommendations of the peer review report:

Based on the recommendation of the review committee, the School proposes to:

- Offer Interdisciplinary academic programmes - Two-year M.Tech, MS, Ph.D. in Infrastructure Design and Management.
- Offer capsule Programs for Practicing Professionals.
- Undertake sponsored Research and Consultancy Projects.
- Organise workshops and seminars on specific issues related to Infrastructure Design and Management.
- Conduct short-duration training programmes for Government and private organizations in efficiently designing and managing infrastructure projects.

8. Strengths, Weaknesses, Opportunities & Threats (SWOT) Analysis of the Department

<p>STRENGTHS</p> <ul style="list-style-type: none"> • Existing faculty and academic programs from relevant departments can form the strong knowledge base. • Conducive ambiance and well endowed computational and academic infrastructure facilities • Fairly good placement record • Periodic updating of curriculum • Periodic feedback of the students • Alumni endowed Chair Professor appointment <p>WEAKNESSES</p> <ul style="list-style-type: none"> • Space shortage • Absence of core faculty • Inadequate and insufficiently trained supporting staff 	<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Infrastructure sector is booming in India. • There is a huge demand for trained professionals • Increase of research activities: PhD and sponsored research • Possibility of more international and national collaborations and joint ventures • Training of technical supporting staff • Tapping of Alumni experience; building corpus fund, developing labs, collaborative programs with world class universities/ industries of international repute <p>THREATS</p> <ul style="list-style-type: none"> • Growing competition with other Institutes offering similar programs • More attractive opportunities offered by city-based institutes to attract and retain good students and faculty. • Lack of awareness of future students or several companies coming for placement.
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9. Additional Information, if any

None

***Note: Ten countries: UK, Germany, Japan, Canada, France, Italy, Australia, Singapore, South Korea**

Important Highlights

Ranbir and Chitra Gupta School of Infrastructure and Design

GENESIS OF THE SCHOOL

Recognising Infrastructure as one of the most essential requirements for economic development of any country the Ranbir and Chitra Gupta School of infrastructure Design and Management has been started by IIT Kharagpur in the year 2008 as a result of the joint initiative of the institute and Mr. Ranbir (Ron) Singh Gupta, an alumnus (1970 batch B.Arch) of this Institute. The school of Infrastructure Design and Management is the first such school to be setup in the IIT system and also in the country. Indian Institute of Technology Kharagpur has a vantage position with regard to its existing faculty and academic programmes in the areas of engineering, architecture and management. The institute, with its numerous academic departments, centers and schools with academic programmes in such wide ranging areas such as law, management, architecture and engineering, is in a uniquely advantageous position to contribute to the nation's goal of building world-class infrastructure.



The Mission of the School is “to prepare outstanding professionals capable of designing and delivering quality infrastructure projects efficiently and effectively with a comprehensive and fast-track approach”.

THE M.TECH PROGRAMME IN INFRASTRUCTURE DESIGN AND MANAGEMENT

The school currently offers a Two-year M.Tech programme in “Infrastructure Design and Management” which was conceived and formulated in 2008 through a series of consultations and brainstorming sessions conducted in the institute. The course has been designed to be interdisciplinary to address the needs of different infrastructure sectors. Some subjects, identified to be relevant for most infrastructure sectors, have been included as core (compulsory) subjects. These are :- *Project Engineering and Management, Financing Infrastructure Projects, Quantitative*

Methods for Decision making, Environmental Impact Assessment, Infrastructure Regulatory Issues and three laboratories for simulation, project management and virtual reality.

Besides the compulsory subjects, each student can take five elective subjects which have been grouped under different “Verticals”. Students can select their elective groups depending on their background and interest in a specific infrastructure sector. The elective groups available at present are :- *Transportation, Public Utilities, Facilities Infrastructure and Power Systems.*

Taking into consideration the four vertical groups of electives currently available, students with the following backgrounds are eligible to opt for this M.Tech programme.

- Architecture (Infrastructure Facilities vertical)
- Civil Engineering (Transportation and Public Utilities verticals)
- Electrical Engineering (Power Systems vertical)
- Mechanical Engineering (Power Systems vertical)

ADMISSION CRITERIA

The Eligibility of the students intake is : BE / B.Tech in Civil, Electrical and Mechanical Engineering; B. Arch / B. Planning. Candidates are selected based on the qualifying through GATE and Personal Interview, as well as Sponsored Candidates.

STUDENT INTAKE

Initial Sanctioned Strength has been 20, increased to current Sanctioned Strength 31, with a variable proportion of Civil engineers (10), Architecture / Planning (10) and Electrical / Mechanical (11)

ACADEMIC PROGRAMME

Core Theory Subjects are : Project Engineering and Management, Financing Infrastructure Projects, Quantitative Methods for Decision Making, Environmental Impact Assessment, and Infrastructure Regulatory Issues. Core Laboratory subjects are : Simulation Laboratory, Virtual Reality Laboratory, Project Management Laboratory. Students are encouraged to select Elective subjects from various disciplines under the verticals as well as external departments.

ACADEMIC RESOURCES

The M.Tech programme, being completely inter-disciplinary in nature, is mostly sustained through the support provided by a number of faculty members of the following departments, schools and centers of the institute.

- Department of Architecture and Regional Planning
- Department of Civil Engineering
- Department of Mechanical Engineering
- Department of Electrical Engineering
- Department of Industrial Engineering and Management
- Rajiv Gandhi School of Intellectual Property Law
- Vinod Gupta school of Management
- Ocean Engineering and Naval Architecture

PROGRAMME IMPLEMENTATION COMMITTEE

A Core Committee formed by the Dean, Post Graduate Studies, comprising the following members, formulated the curriculum under the guidance of the Dean, PGS. The committee also functions as the programme implementation committee by advising the Head of the school on different issues.

ADVISORY COUNCIL

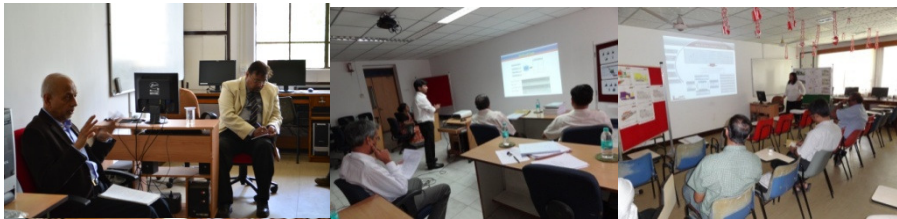
An advisory council has been formed to shape the objectives of the school and provide direction. A list of the current members, external as well as internal, is given in table 1.

THRUST AREAS

The thrust areas of the school are : Sustainable Infrastructure Planning, Energy management in infrastructure, Infrastructure Project management, Social infrastructure : Education and Health, Framework for urban services delivery, Urban infrastructure, Recreational and Tourism infrastructure, Eco-industrial infrastructure, Municipal infrastructure, Power infrastructure, Transport infrastructure, Infrastructure risk management, Infrastructure finance, Organisational management, Rural infrastructure, Infrastructure Insurance.

Current research areas are : Livability and Community Planning, Metro stations Transfer Facilities, Telecom Infrastructure, Health Infrastructure Information System, Managing feeder service in rural areas, Increasing capacity of public transport system.

PROJECT REVIEW AND INDUSTRIAL INTERACTION

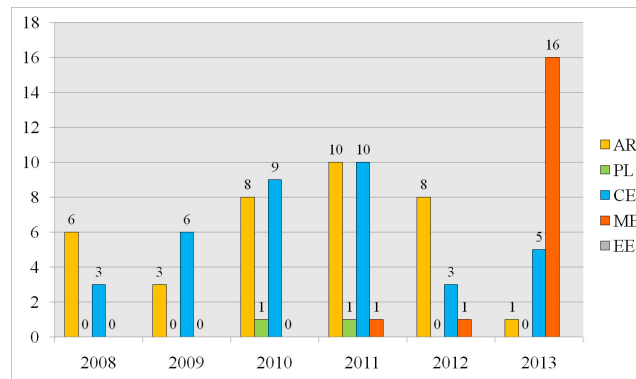


INTERNATIONAL EXCHANGE

- Faculties and students are part of the exchange programmes executed within the domain-specific MoU between the Institute and foreign universities
- Since inception there have been regular faculty and student participation in the DAAD programme of Germany
- No. of students visited Germany for the DAAD programme
 - 2013 - 2 Darmstadt TU 1 AR 1 CE
 - 2012 - 2 Darmstadt TU 2 AR
 - 2011 - 2 Darmstadt TU 1 AR 1 CE
 - 2010 - 1 Darmstadt TU 1 AR

STUDENT INTAKE

The following figure illustrates the student intake trends



RECENT ACTIVITIES

The school, in association with other departments and schools, has undertaken the following activities in the recent past.

- International Conference on “Infrastructure Finance” (ICIF-2010) (3-5 June 2010) jointly organized by Vinod Gupta School of Management and Ranbir and Chitra Gupta School of Infrastructure Design and Management
- Indo-US workshop on "Highway and Airport Pavement Engineering - Challenges and Opportunities", 30-31 July 2010, Jointly organized by Transportation Engineering Section of Civil Engineering Department and Ranbir and Chitra Gupta School of Infrastructure Design and Management

VISITING EXPERTS AND GUEST SPEAKERS

A number of guest speakers visited the school and made presentations on various topics. Some of these are :-

- Mr. P. L. Bongirwar on “Innovations in Transportation Infrastructure Sector”
- Mr. D. V. Sridhara Murthy on “Financing Infrastructure Projects - Case Studies”
- Dr. N. C. Pal on “Infrastructure regulatory Issues – Case Studies”
- Mr. Rajiv Nehru on “Project Management Techniques”
- Mr. Raj Mosur on “Aesthetics of Bridges in Transportation Infrastructure”
- Prof. P. K. Sikdar on “Traffic Safety”
- Prof. Nazarian on “Non-destructive Evaluation of Pavements”
- Dr. Tejas Gandhi on “Warm Mix Asphalt Technology”

- ix. Mr. Narendra Goud on “Foam Bitumen Technolgy”
- x. Mr. Barihoke on “Ploymer Modified Bituminous Binders”

TRAINING AND PLACEMENT

Though internship is not an academic requirement for the students of “Infrastructure Design and Management”, nearly all the students undertake internship in different infrastructure companies in Winter and / or Summer breaks. Details of placement of the first two graduating batches of M.Tech students are as given below.