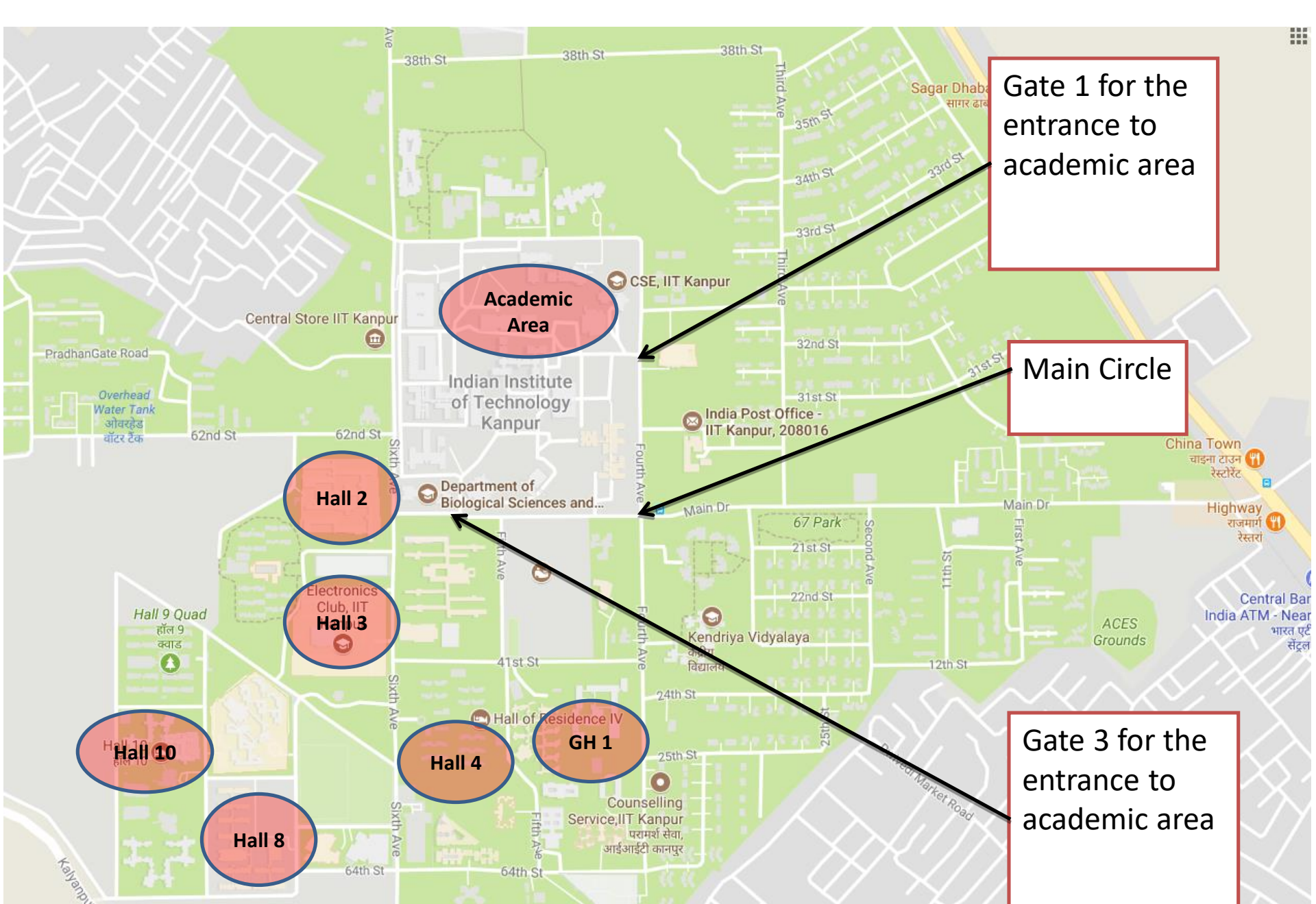


Welcome to the Department of Materials Science & Engineering



4th January 2021

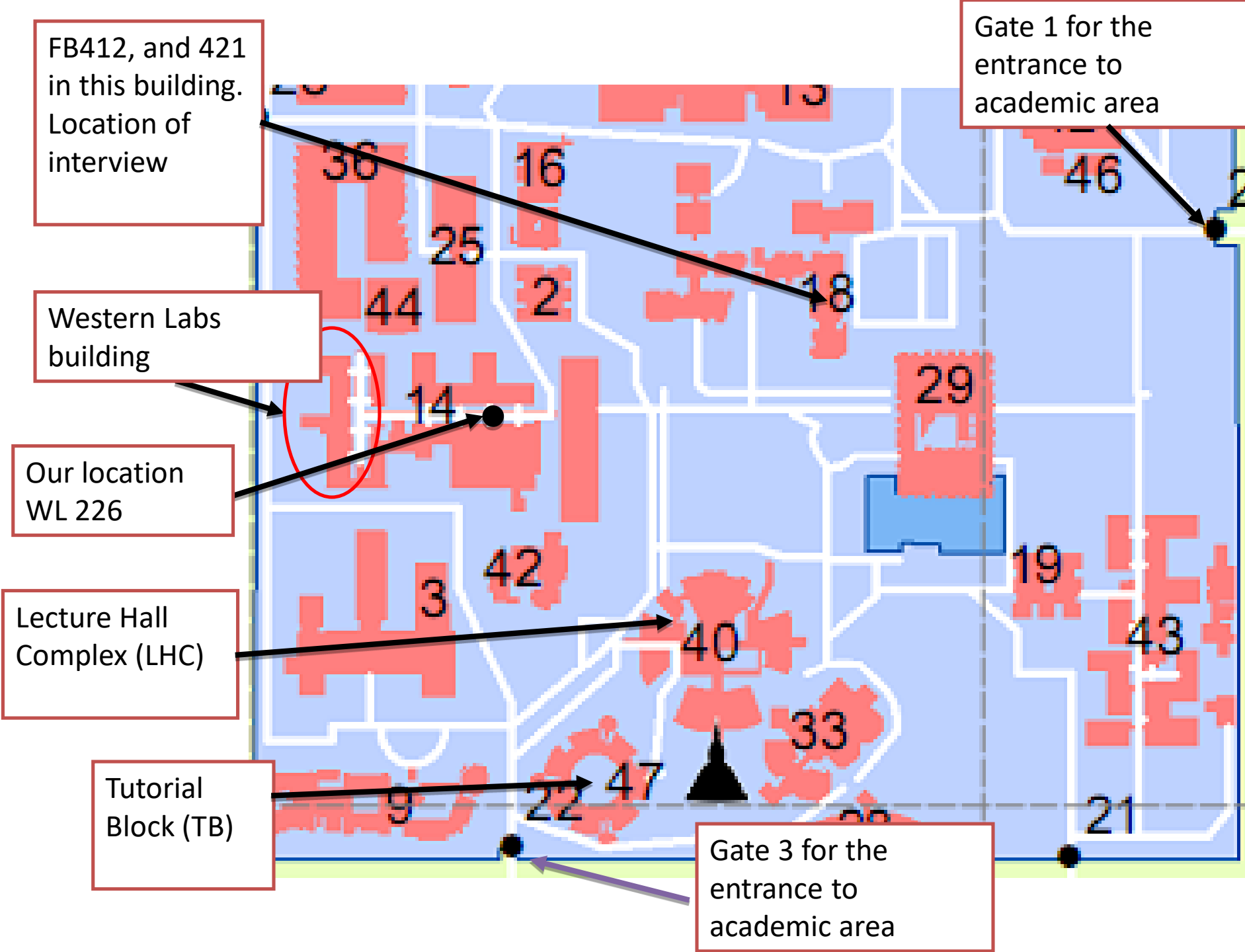
Indian Institute of Technology Kanpur



Gate 1 for the entrance to academic area

Main Circle

Gate 3 for the entrance to academic area



Institute Information

www.iitk.ac.in

The screenshot shows the IIT Kanpur website homepage. At the top, there is a navigation bar with links for Home, Departments, Centres & Facilities, Academics, Directorate, Deans, Placements, Campus Services, Quick Links, and Contact. Below the navigation bar, there are social media icons for Facebook, Twitter, and LinkedIn, followed by the text "beta". To the right, the IIT Kanpur logo and name are displayed, along with the Indian Institute of Technology, Kanpur seal.

The main content area features a grid of four featured articles:

- First humanitarian drone, developed at IIT Kanpur**: Accompanied by an image of a drone in flight.
- Advancing the Efficiency and Production Potential of Excitonic Solar Cells**: Accompanied by an image of solar panels.
- Study Shows Indus Valley Urban Centers Developed After River Departed**: Accompanied by an image of people working with machinery.
- Counselling Service**: Accompanied by the IIT Kanpur Counselling Service logo.

Below the featured articles, there is a search bar and a navigation menu with categories: Institute, Research, Faculty, Students, Consulting, Innovation & Incubation, Alumni, Staff, and Culture & Sports. The "Institute" category is currently selected.

The "Institute" section includes links for Future Students, Placement Report, Faculty positions (all levels), and Postdoctoral Fellows Announcement.

The main content area is divided into four columns:

- Overview**: Contains an image of the IIT Kanpur campus.
- Education at IITK**: Contains an image of students in a classroom.
- Latest News**: Lists recent news items, including Professor S.P. Rath (CHM) selected for the C.N.R. Rao National Prize in Chemical Sciences, Professor J.N. Moorthy (CHM) selected for the Silver Medal of the Chemical Research Society of India (CRSI), and Prof. P. Venkitanarayanan (ME) selected for the 2019 F. Zandman award of the Society of Experimental Mechanics (USA).
- Announcements**: Lists upcoming events and opportunities, including JEE Qualified Candidates, OSI - International Symposium on Optics (OSI-ISO 2018) 19 - 22 September 2018, NIRF 2018, Staff Vacancies, and Courses / Conferences / Workshop / Convention.
- Featured Research**: Displays a research image with the IITK logo and the text "Variable gaseous plasma focused ion beams...".

The bottom of the page shows the Windows taskbar with the search bar and system tray.

Department Information

<http://www.iitk.ac.in/mse/>



INDIAN INSTITUTE OF TECHNOLOGY KANPUR
MATERIALS SCIENCE AND ENGINEERING

SEARCH

IITK HOME OLD WEBSITE



HOME

PEOPLE

ACADEMICS

RESEARCH

FACILITIES

INTERNAL LINKS

ADMINISTRATION

SUO MOTO DISCLOSURE

CONTACT



List of Selected Candidate for Admission in M.Tech Programme AY 2019-20

NEWS



A highly Porous Acoustic Tile invented at IITK, with 5 times better Sound Damping capacity than normal Ceramic Floor Tiles, having application in Earthquake Cooling, Refrigeration, Insulation of Porous Bricks. <http://bit.ly/2Wt5pD>



Congratulations to Dr. Kantesh Balani and his team! Material

[see all...](#)

MESSAGE FROM HEAD



Materials Science and Engineering (MSE) Department at IIT Kanpur is home to about 276 BTech, 13 BTech (dual degree), 55 M.Tech and 101 PhD students pursuing their degrees under able guidance of highly accomplished and distinguished faculty members. MSE Dept. is nationally and internationally known for its academics, high quality research and consultancy work.

Undergraduate students Postgraduate students
Teaching and Research Infrastructure
Research and Consultancy Opportunities

CONFERENCE/SEMINAR/WORKSHOP

19 Dec

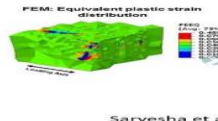
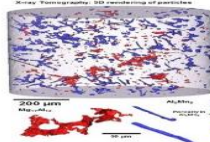
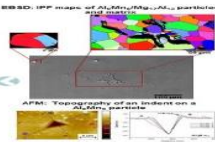
Mr. Nitin Kapoor, Technologist & Entrepreneur, delivered a talk on "Engineer's in Today's World: The More Things Change, The More They Remain Same" at FB421 (Seminar Room) on Dec. 19, 2019 (Thursday), at 11:00 am.

29 Nov

Dr. Chaitanyakrishna Kamaja, IPDF, MSE, IIT Kanpur, delivered a talk on "Investigation of MXene and graphene for energy storage

[see all...](#)

RESEARCH HIGHLIGHTS



[click here to know more about the Work](#)

RELATED LINKS

HISTORY

The department of Metallurgical Engineering, founded in the year 1960, initially started functioning in the HBTI campus in Kanpur. As the B. Tech. curriculum was of five years duration, the common core program was followed for the first three years. (read more...)

DEPARTMENTAL ANNUAL EVENTS
Samsenoy Memorial International Lecture Series
EC Subbarao Lecture Series
Research Scholar's day
Prof. N. K. Batra Metals and Materials Quiz

MSE NEWSLETTER

[Click here for Newsletter](#)

SOCIAL MEDIA NEWS FEED

Tweets by @IITMse

MSE IIT Kanpur

Congratulations Professor Kantesh Balani, Department of Materials Science and Engineering, @IITKanpur has been invited to join the editorial board of "Journal of Materials Research" starting January 2020. [cambridge.org/core/journals-@IITMse](https://www.cambridge.org/core/journals/journals-@IITMse)



Congratulations Professor Kantesh Balani, Department of Materials Science and Engineering, IIT Kanpur has been invited to join the editorial board of "Journal of Materials Research" starting January 2020. [cambridge.org/core/journals-@IITMse](https://www.cambridge.org/core/journals/journals-@IITMse)

[Embed](#)

[View on Twitter](#)

PHOTO GALLERY



TEQIP on Pedagogical Approach Towards Teaching Materials Processing, September 12-14, 2019

[view gallery](#)

ABOUT THE DEPARTMENT



The Department of Materials Science & Engineering established in the year 1960, is ranked among the nation's top schools in Materials Science and Engineering. Earlier known as Materials and Metallurgical Engineering at IIT Kanpur, the department since its inception has placed very strong emphasis on educating and nurturing young minds to impart quality education with strong fundamentals by offering an interdisciplinary curriculum. With cutting edge research in diverse facets of materials science, the department is endowed with a highly competent undergraduate program, a dynamic graduate program and distinguished faculty. The alumni network of the department spans across the national and international horizons comprising of remarkably skilled and knowledgeable individuals.

PAST RECRUITERS



Department Information

- 26 Faculty members + 1 Visiting Professor
- 23 Staff members + 1 Research Establishment Officer(REO)
- ~300 Undergraduates
- 223 Postgraduates (9 B.Tech.-M.Tech. + 80 M.Tech. + 134 Ph.D.)

- Head: Prof. Monica Katiyar (mk@)
- Office Staff: Mr. Guddu Kumar (gkumar@) and Mr. Aniket Dwivedi (aniket@);
Ph:7640, Mr Arpit & Mr Prashant
- Website: <http://www.iitk.ac.in/mse>
- Internal: <http://lattice.mme.iitk.ac.in/>
- Program Rules and Guidelines: Visit <http://www.iitk.ac.in/spgc/>

Department Post Graduate Committee (DPGC)

Faculty Members (5)

Dr. Somnath Bhowmick(Convener, bsomnath@)

Dr Monica Katiyar, HOD,(mk@)

Dr. Krishanu Biswas (kbiswas@)

Dr. Sudhanshu Shekhar Singh(sudhanss@)

Dr. Kanwar Singh Nalwa(ksnalwa@)

Student Members (1)

Roopam Jain

Research @ MSE

- Micro, nano and quantum level materials science
- Extractive, Process and Powder Metallurgy
- Physical Metallurgy
- Mechanical Behavior of Materials
- Electrochemistry and Corrosion Science
- Computational Materials Science and Process Modelling
- Bio-materials and Biotechnology
- Functional materials (e.g. Optical, Magnetic, Optoelectronic and Multiferroic) and Devices such as Memories, Displays and LEDs
- Energy and Environment Related Materials for Solar Cells, Fuel cells and Hydrogen Storage

Research Facilities

- **Synthesis and processing facilities for bulk and thin films**
 - Specialty melting units and furnaces
 - Physical and chemical thin-film processing methods
 - Mammalian and bacterial cell culture facilities
 - Advanced sintering techniques such as microwave and spark plasma sintering,
 - Conventional mechanical processing units such as rolling, swagging, and hot press
 - Class 100 and 10000 clean rooms for the fabrication of devices.
- **Characterization facilities**
 - Microscopy facilities consisting of optical and electron microscopes (SEM/ TEM/ FEG-SEM) and Atomic force microscope (AFM)
 - Powder and thin film X-ray diffractometers (XRD)
 - TGA/DTA/DSC/Raman Spectroscopy
 - State-of-the-art testing facilities for measurement of complete array of mechanical, electrical, optical, magnetic and functional properties
- **Central Facilities:** Advanced Center for Materials Science (ACMS); Advanced Imaging Center (AIC), Nanoscience Center, HPC facility

PG Program: General Points

- “Normal” semester load: 36 Credits (1 Course-9 credits; 1 Thesis-9 credits)
- Teaching Assistant (TA) duty
 - PG Students on institute assistantship are expected to devote in 8 hours of TA work/week. The TA assignment will be done every semester by the DPGC.
- Registration of “zero credit” compulsory courses
 - MSE 690: Seminar Participation/MSE 691: Seminar Presentation (*MSE690 is prerequisite for MSE691*)
 - Should be done in consecutive semesters, prior to appearing for comprehensive exam for Ph.D. students)
- Department encourages you to go through the courses on communication skills (such as MSE300), courses with CDTE (Centre for Development of Technical Education) and EPP (English Proficiency Cell)

Important Dates

Late Registration: Jan 18

Release of First Course Handout: Jan 12

Online Classes Commence: Jan 13

Adding a Course: Jan 13-19

Further detail:

https://www.iitk.ac.in/doaa/data/Calendar-2020-21-II_&_Summer-2021.pdf

PhD Program

- Students with B.Tech. in Engineering or a M.Sc. degree
 - Minimum total credits: 216
 - Course work: 90 (min.)
 - Minimum number of courses: 10
 - Minimum residence: 6 semesters
 - Maximum duration: 7 years
- Students with M.Tech. degree in Engineering
 - Minimum total credits: 144
 - Course work: 36 (min.)
 - Minimum number of courses: 4
 - Minimum residence: 4 semesters
 - Maximum duration: 6 years (7 years for part time or external)

For any other additional course taken by student, student will be awarded S/X grade unless student requests for a course to be used for computing his/her CPI

PhD Coursework

- DPGC recommends four courses in the first semester i.e. no thesis credits.
- Selection of thesis supervisor is permitted up to pre-registration date for the next semester in the first semester of registration of the student.
- Students with little or no background in Materials Science fundamental courses are recommended to take M.Tech. compulsory courses (as mentioned above) which can be discussed with DPGC or the thesis supervisor.
- Students can also audit (i.e. without registering) certain courses, if permitted by the instructors.

Steps to PhD

- A thesis advisory committee to be formed for each PhD student before the comprehensive exam is carried out.
- Comprehensive Exam for PhD Students
 - Students registered in the Ph.D. programme **must pass a comprehensive examination**. Passing this exam is a mandatory requirement for formally registering into the PhD programme. A student can appear in the comprehensive examination only after he/she has completed the course requirements and satisfied the minimum specified CPI requirement.
 - Students admitted with **B.Tech, M.Sc** must pass it before the end of the fifth semester after their first registration.
 - Students admitted with **M.Tech or equivalent degrees** must pass it before the end of the fourth semester after their first registration.
- State of the Art Seminar (SOTA) within six months of passing the comprehensive exam
- Peer Review for PhD Students
 - While thesis advisory committee monitors the progress of a PhD student's thesis each semester after Comprehensive exam and SOTA are completed, after completion of tenth semester, a peer review committee needs to be formed which submits its report to the SPGC each semester for the continuation of the program and the scholarship.

M.Tech. Program & Coursework

- **Minimum credits: 144**
 - Course work: 72 (min), Research: 72 (min)
 - Minimum number of courses: 8
 - Minimum residence: 4 semesters
 - Maximum duration: 4 years (5 years for part time or external)
- **A student registered in the M. Tech. program has to do 4 compulsory courses:**
 - First Semester: MSE 615 (Structure and Characterization of Materials) & MSE 626 (Heat and Mass Transfer)
 - Second Semester: MSE 616 (Thermodynamics of Materials) & MSE 617 (Mathematical and Computational Methods)
- Remaining two courses in each of the first two semesters will be chosen by the candidate him/herself to fulfil the minimum credit requirement.
- Selection of thesis supervisor is permitted up to pre-registration date for the next semester in the first semester of registration of the student.

Academic Requirements

Grading Scheme:

Courses: A*(10),A(10),B(8),C(6),D(4),E(0),F(0) Thesis:

Satisfactory(S), Unsatisfactory(X)

Ph.D.

- A minimum CPI of 7.0 should be maintained for graduation
- In the first semester 6.0 is allowed only on the recommendation of DPGC

M.Tech.

- A minimum CPI of 6.5 should be maintained for graduation
- In the first semester 6.0 is allowed only on the recommendation of DPGC

Financial Assistance (IA)

M.Tech.:

Rs 12,400/-

Ph.D.:

Rs. 31,000/- (1st & 2nd year) p.m.

Rs 35,000/- (3rd , 4th & 5th year) p.m. *(subject to satisfactory performance)*

Teaching Assistantship (TA duty):

Each student with IA status is needed to devote up to 8 hours per week towards TA duty.

Leave Rules

- **Vacation leave**
 - Max. 30 days in an academic year with no more than 10 days of leave during a semester.
 - 10-day cap is not enforce during the summer term or during the period of institute vacation.
 - Maximum 15 days of leave can be carried over to the next academic year.
- **Casual leave**
 - Max. 6 days during semester and max. 4 days during the summer term.
- **Medical leave**
 - Supported by a medical certificate, up to 8 days per semester and 4 days during the summer term. At a stretch, medical leave shall not exceed beyond 15 days during a semester.
- **Maternity leave**
 - Max. of 3 months
- **Semester leave**
 - Semester leave up to a max. of 2 semesters and summer term for Ph.D. students.
- If a student is absent on sanctioned leave for a period of 4 weeks or more, the leave can be converted to semester leave or thesis credits may be reduced.
- Absence without sanctioned leave will entail loss of Financial Assistantship for the period of absence and may result in the termination of student's programme.

PG Student Awards & Other Opportunities

- Dual Ph. D. program with several universities (NTU Taiwan, Curtin University Australia, Melbourn University Australia)
- Funds for attending national and international conferences
- M. Tech. students with CPI > 8 can directly convert to Ph. D.
- Best Software award
- Cadence Gold Medal
- Ranjan Kumar Memorial Award
- SIIC Student Innovation Award
- Boginenu Chenchu Rama Naidu Gold Medal Award
- Prof. Baldeva Upadhyay Gold Medal Award
- P.K. Subbulakshmi Memorial Award
- Gargi, Maitreyi & Lilavati Award
- A. K. Bose Gold Medal Award
- ASM Award



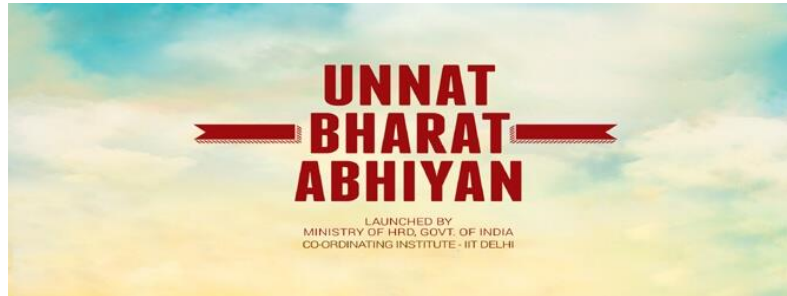
SPORTS ACTIVITIES @ IITK



Educational and Outreach Activities



RuTAG
Rural Technology Action Group
Indian Institute of Technology Kanpur



IIM

The Indian Institute of Metals
Metallurgy Materials Engineering



*Vivekananda Samiti,
IIT Kanpur*