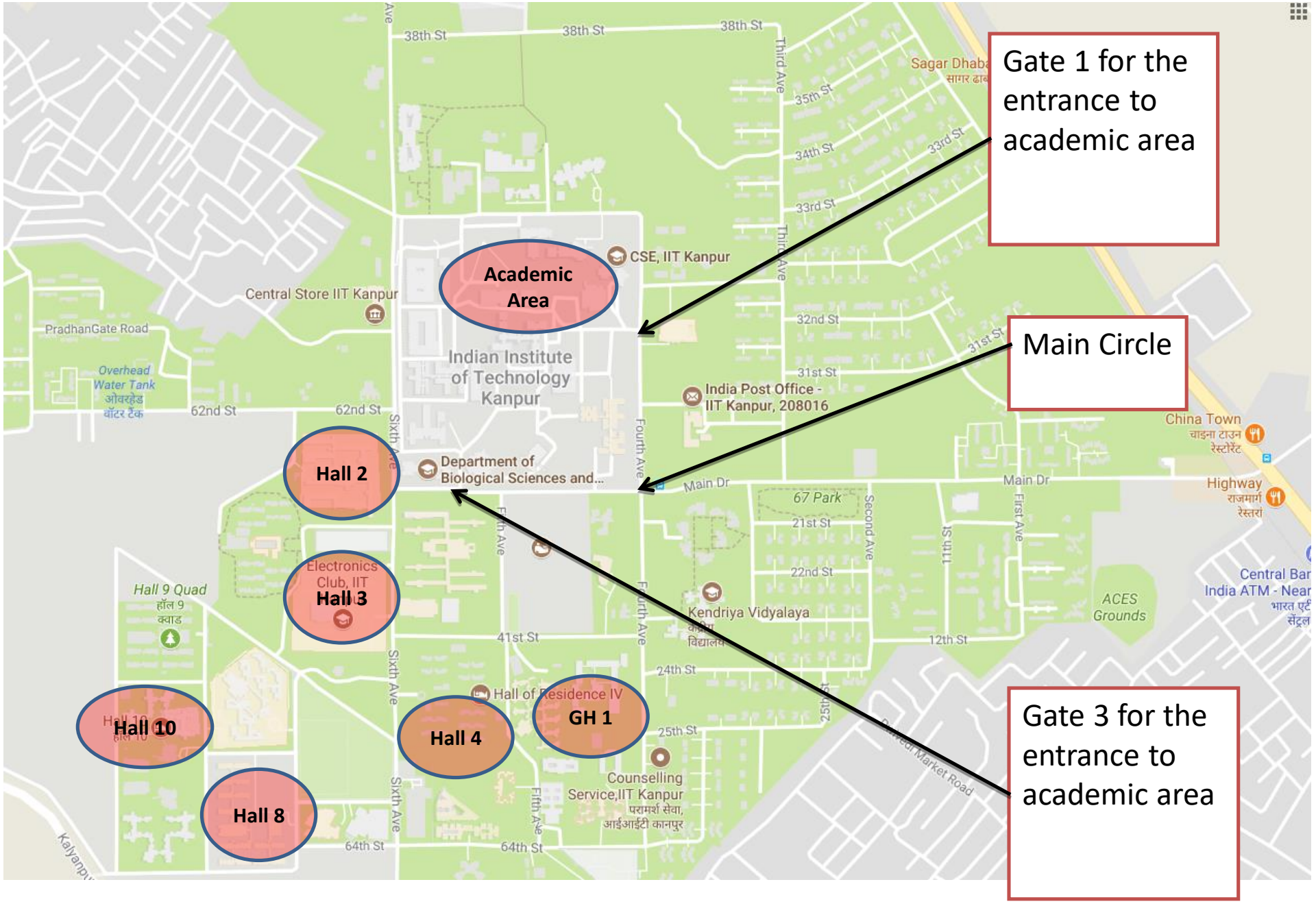
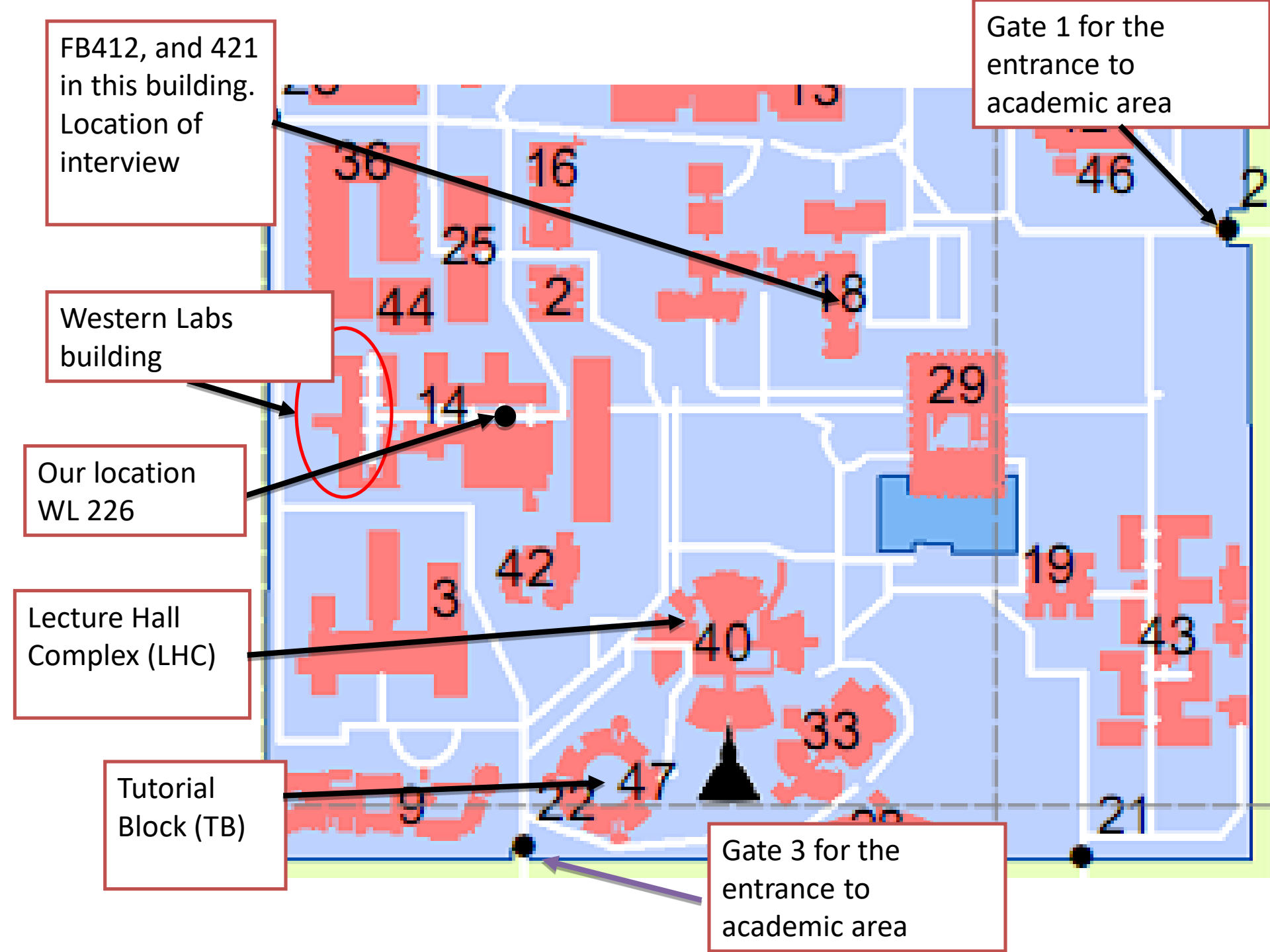
Welcome to the
Department of Materials Science & Engineering

4th January 2021
Indian Institute of Technology Kanpur



Courtesy: Google Maps


FB412, and 421 in this building. Location of interview
Gate 1 for the entrance to academic area
Western Labs building
Our location WL 226
Lecture Hall Complex (LHC)
Tutorial Block (TB)
Gate 3 for the entrance to academic area
36
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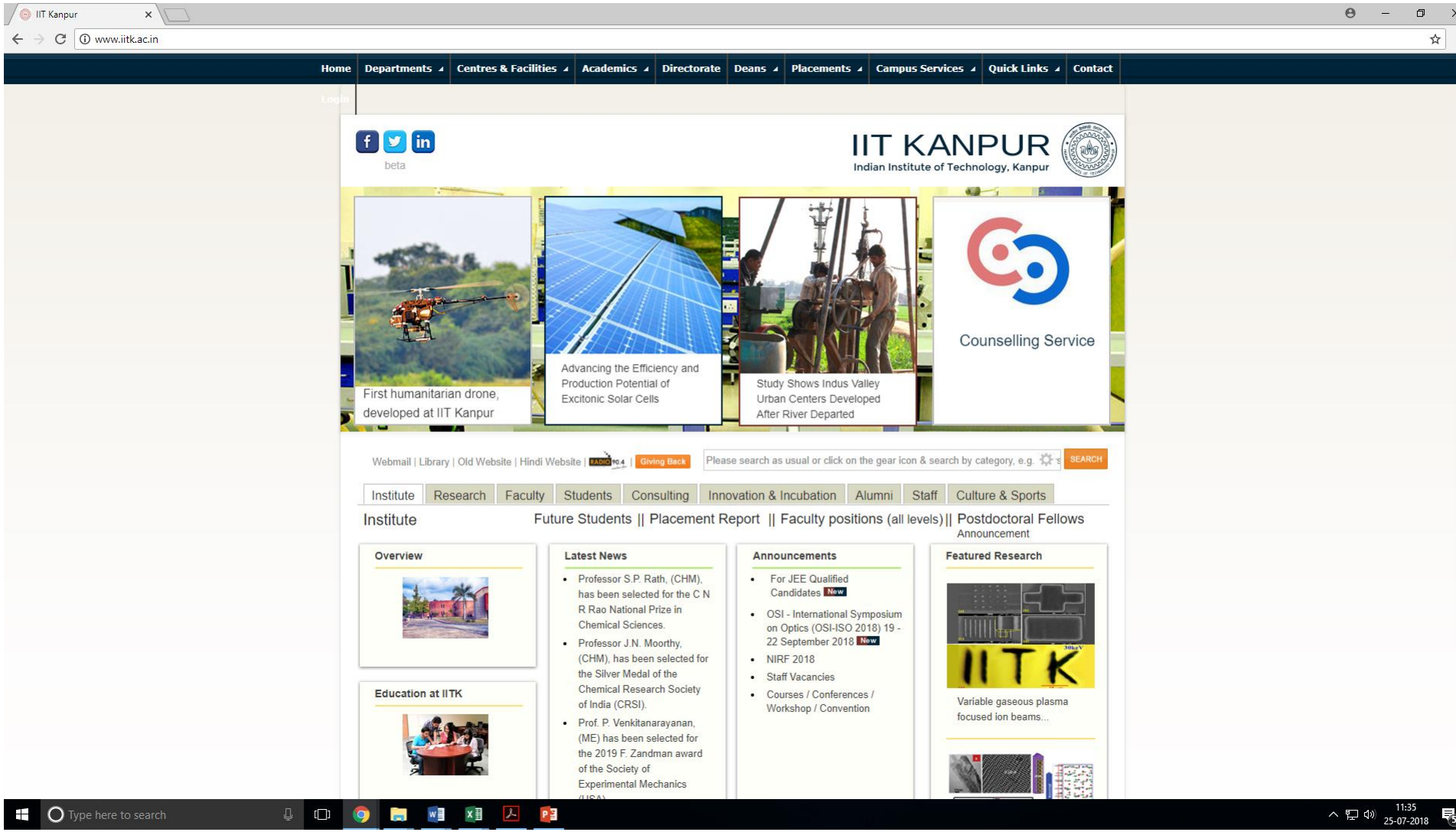
Institute Information

www.iitk.ac.in



Department Information

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

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 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.

http://www.iitk.ac.in/mse/data/MSE_PG_Courses.pdf

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

parivartan

UNNAT BHARAT ABHIYAN
LAUNCHED BY
MINISTRY OF HRD, GOVT. OF INDIA
CO-ORDINATING INSTITUTE - IIT DELHI

IIM
The Indian Institute of Metals
Metallurgy Materials Engineering

MATERIAL ADVANTAGE™

Vivekananda Samiti,
IIT Kanpur