

International Institute of Information
Technology Bhubaneswar
(A University established by Govt. of Odisha)

www.iiit-bh.ac.in

Important Dates

Submission of online application commences on :	22 nd March, 2016
Last date for submission of online application:	30 th April, 2016
Date of Selection Test (Tentative) :	15 th -31 st May 2016
Commencement of classes:	1 st August, 2016

Information Brochure
ADMISSION TO THE REGULAR
M.TECH. PROGRAMMES



International Institute of Information Technology Bhubaneswar
(A University Established by the Government of Odisha)
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About the Institute

IIT Bhubaneswar owes its origins to the initiative of the Government Odisha. It is a result of the desire of the Government to establish a world class institute of Information Technology in the state. The Management of the institute is in the hands of a Board of Governors, consisting of representatives from the Government of Odisha, Leaders from the IT industry and eminent academicians. IIT Bhubaneswar has become unitary University in January 2014, after the enactment of IIT Bhubaneswar Act. (Odisha act of 2013)

IIT-Bhubaneswar focuses on quality and rigorous education, quality resource, academic infrastructure, technology and innovation. These initiatives will help IIT-Bhubaneswar achieve pre-eminence in India and beyond.

The Institute offers Undergraduate, Masters and Doctoral programmes in various engineering disciplines. The Institute started offering M.Tech. Programmes in 2007 and B.Tech. Programmes in 2009 and Doctoral Programmes in 2014.

Vision

Our vision is to be a unique institute imparting education, training, research, and consulting in technology and related fields to develop human resources who will lead the economy and the society in the coming decades.

Mission

The mission of IIT is to be a knowledge seeking Institution of higher learning that will educate students in technology and other disciplines of scholarship. The Institute will work closely with the Industry and other users of the technology to develop and deliver technological solutions to enhance their competitive position.

The Institute is committed to the entire value chain of knowledge creation, diffusion and preservation to meet the challenges of the century. The Institute will borrow best practices in education delivery systems, research and consulting practices. Leveraging technology to bring about next generation practices will be a key to this strategy.

The Institute is dedicated to creating a community of students, faculty and scholars with passion for learning, creativity, innovation in all aspects of academic pursuit.

The Institute will cultivate values of honesty and transparency, respect for the individual, commitment to quality and high standards, passion for performance and sensitivity to social and ethical issues.

Academic Programmes (M.Tech.)

The Institute offers M.Tech. programme in the following disciplines:

1. Computer Science and Engineering (In take capacity of 25)
2. Communication Engineering & Signal Processing (In take capacity of 18)

The objective of these programmes is to develop professionals suitable for higher needs of the Industry and Academics. The programmes aim to develop problem solving skills, learnability, multiskilling and multitasking abilities and spirit of enquiry and adventure. Besides, these programmes also emphasize on collaboration and teamwork, human relation skills and attitude.

The M.Tech. programmes are divided into four semesters. The first two semesters will involve class room teaching, labs, in-course projects. The 3rd semester will involve both class room teaching and project work. The last Semester will be used for an independent project or in-company internship. The academic session will begin in August 2016 for the 1st year new entrants.

The M.Tech. curriculum consists of core subjects and electives. The core subjects expose the students to all the fundamental and emerging areas of the respective disciplines. The electives are designed to offer the students a choice list of subjects of higher order to expand their interest. The electives evolve with the newer technologies and development in the Industry.

There are a few things special about our curriculum. Each course where applicable will involve lab components, tutorial components and in-course project components. The courses involve team work in projects, assignments and other learning components which is an integral part of the learning approach.

The degree will be awarded to students who successfully complete the required credits.

Admission

Eligibility

M.Tech. (Computer Science & Enggineering)	M.Tech. (Communication Engineering & Signal Processing)
<ul style="list-style-type: none"> • B.Tech/B.E. from any recognized universities in CSE/IT. • M.C.A from any recognized university • M.Sc.(Computer Science) • Any Equivalence of the above (Recognized by Govt. of India/ Govt. of Odisha) 	<ul style="list-style-type: none"> • B.Tech/B.E from any recognized universities in Electronics and Telecommunication, Electronics and Communication, Electronics and Instrumentation, Instrumentation and Control, Electrical, Electrical and Electronics. • M.Sc. (Electronics) • Any Equivalence of the above (Recognized by Govt. of India/ Govt. of Odisha)

Candidates who expect to complete the final part of their examinations by June 30, 2016, can also apply. Offers of admission to such candidates, if made, will be provisional and will be automatically cancelled in the event of their failing to complete all the requirements for obtaining the degree before June 30, 2016.

How to Apply:

Visit the website www.iiit-bh.ac.in to apply on line for the M.Tech. (Computer Science & Engineering) and M.Tech. (Communication Engineering & Signal Processing) Programme. Please note that only on-line application is accepted. The online transaction ID of payment has to be kept ready at the time of filling the online application form, since the online transaction ID has to be entered in the application form.

- Online transaction can be made via debit / credit card/net banking.
- Click on the link given in the website for admission.
- Register using your name and e-mail id. An email containing the password will be sent to your e-mail id.
- Login using the email id and the password. You can do the following:
 - Make on-line payment of non refundable application fee
 - Fill in the application form and edit it later
 - When the form is completely filled in, commit the form. Editing will not be allowed after that
 - Print the application
 - View Notice Board
- Keep on visiting our Website to view important announcements regarding the admission process.

You are required to send the following by speed post/hand delivery so as to reach IIT Bhubaneswar latest by **7th May 2016**.

- Printed copy (duly signed by the candidate) of the application form submitted on line.
- A recent passport size photograph, pasted on the front page of the application form.
- Printed copy of the transaction slip of Rs.1000.00 (Rupees one thousand only).

Your admit card will be sent to you through e-mail. You are required to paste your photograph in the space provided in the admit card and bring the same for the entrance test. (You shall paste the copy of the same photograph already sent along with the copy of the on line application form).

Entrance test:

The entrance test consists of written test and personal interview. It shall be conducted in seven places across India*:

Bangalore, Bhubaneswar, Chennai, Delhi, Hyderabad, Kolkata and Mumbai.

The candidates are required to give **at least 3 choices** of the places for Entrance Test in order of preference. The entrance test will be held during the week (15th-31st May 2016). The exact venue, date & time shall be sent to you by e-mail. The same information shall also be available to you in the website.

*The test shall be held in the above said centres subject to a considerable number of candidates otherwise the students will be asked to appear the test in the nearest centre.

Written Test:

The written test shall be of one hour duration consisting of multiple choice type questions carrying 2 marks each. Total mark of the written test is one hundred (100). There will be negative marking of 0.5 for every wrong answer.

M.Tech. (Computer Science & Engineering):

Candidates possessing valid GATE (CS) score are exempted from written test. However they will have to apply on-line and pay the non refundable application fee mentioned in the *How to Apply* section and appear for the personal interview. They may at their option appear for written test as well. In such a case the score of the written test shall supersede the GATE score for the purpose of generation of merit list and the GATE score shall not be considered.

Syllabus for written test:

English: Vocabulary, comprehension etc.

Digital Logic: Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point).

Programming and Data Structures: Programming in C and C++; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps.

Algorithms: Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide and conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching. Asymptotic analysis (best, worst, average cases) of time and space, upper and lower bounds, Basic concepts of complexity classes P, NP, NPhard, NPcomplete.

Operating System: Processes, Threads, Interprocess communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, I/O systems.

Databases: ERmodel, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees), Transactions and concurrency control.

Computer Networks: ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control, TCP/UDP and sockets, IP(v4), Application layer protocols (ICMP, DNS, SMTP, POP, FTP, HTTP), Basic concepts of hubs, switches, gateways, and routers.

Mathematical Logic: Propositional Logic, First Order Logic.

Probability & Statistics: Conditional Probability, Mean, Median, Mode and Standard Deviation, Random Variables, Distributions, uniform, normal, exponential, Poisson, Binomial.

Set Theory & Algebra: Sets, Relations, Functions, Groups, Partial Orders, Lattice, Boolean algebra.

Combinatorics: Permutations, Combinations, Counting, Summation, generating functions, recurrence relations.

Calculus: Limit, Continuity & differentiability, Mean value Theorems, Theorems of integral calculus, evaluation of definite & improper integrals, Partial derivatives, Total derivatives, maxima & minima.

M.Tech. (Communication Engineering & Signal Processing):

Candidates possessing valid GATE (EC/IN/EE) score are exempted from written test. However they will have to apply on-line and pay the non refundable application fee mentioned in the *How to Apply* section and appear for the personal interview. They may at their option appear for written test as well. In such a case the score of the written test shall supersede the GATE score for the purpose of generation of merit list and the GATE score shall not be considered.

Syllabus for written test:

English: Vocabulary, comprehension etc.

Digital Electronics Circuit, Analog Electronics Circuit and 8085 Microprocessor:

Number Systems: Introduction to Binary Numbers, Data Representation, Binary, Octal, Hexadecimal and Decimal Number System and their Conversion

Boolean Algebra and Logic Gates: Basic Logic Operation and Identities, Algebraic Laws, Logic Gates, Useful Boolean Identities, Algebraic Reduction, Complete Logic Sets, Arithmetic Operation using 1's and 2's Compliments, Signed Binary and Floating Point Number Representation

Combinational Logic Design: NAND and NOR Logic Implementations, Equality Detector, Line Decoder, Multiplexers and De-multiplexers, Binary Adders, Subtraction and Multiplication

Sequential Logic Design: General Properties, Latches, Clock and Synchronization, Master-Slave and Edge-triggered Flip-flops, Registers, RAM and ROMs, C-MOS Memories.

BJTs and FETs: DC Biasing, Small Signal Analysis of BJTs and FETs

Feedback Oscillators, Op-amp and Power Amplifiers:

Principles and Applications , Ideal Op-Amp, Differential Amplifier, Op-Amp Parameters, Slew rate, Op-amp Configurations, Open-loop and Closed-loop Gain, Differentiator and Integrator, Power Amplifier classification and Characteristics

8085 Microprocessor:

Introduction to the general concept of microprocessor organization, I/O sub-systems, programming the system, ALU, instruction execution, instruction word format, addressing modes, address/data/control bus, Assembly Language Programming of 8085 microprocessor, memory and I/o interfacing.

Analog and Digital Communication:

Signals And Spectra: An Overview of Electronic Communication Systems, Signal and its Properties, Fourier Series Expansion, Fourier Transform, Orthogonal Representation of Signal.

Amplitude Modulation Systems: Need for Frequency translation, Amplitude Modulation(*Double Side Band with Carrier DSB-C*),Single Sideband Modulation(SSB) ,Frequency Division Multiplexing ,Radio Transmitter and Receiver

Angle Modulation: Angle Modulation, Tone Modulated FM Signal, Arbitrary Modulated FM signal, FM Modulators and Demodulators, Approximately Compatible SSB Systems

Digital Base band and Pass band Transmission: Sampling, Quantization, ADC using PCM, Delta and DPCM, Concept of matched filter and correlation receiver, BASK, BPSK, DPSK, QPSK, BFSK modulation techniques, BER Calculation, Information Theory and Channel Capacity

Digital Signal Processing:

The Z-Transform and Its Application to the Analysis of LTI Systems:

Direct Z-Transform, Inverse Z-Transform, Properties of the Z- Transform, Causality and Stability, Pole-Zero Cancellations

Discrete Fourier Transform: Its Properties and Applications:

Frequency Domain Sampling: Frequency-Domain Sampling and Reconstruction of Discrete-Time Signals, Discrete Fourier Transform, Properties of the DFT: Periodicity, Linearity, and Symmetry Properties, Multiplication of Two DFTs, Linear and Circular Convolution, Fast Fourier Transform.

Digital Filters:

General Considerations: Causality and Its Implications, Characteristics of Practical Frequency-Selective Filters; FIR Filters: Symmetric and Antisymmetric FIR Filters, Design of Linear-Phase FIR Filters by using Windows, Concept of IIR Filters

Electromagnetics:

Electrostatics; Maxwell's equations: differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector; Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth; Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart; Waveguides: modes, boundary conditions, cut-off frequencies, dispersion relations; Antennas: antenna types, radiation pattern, gain and directivity, return loss, antenna arrays.

Microwave Engineering:

Transmission lines: The Lumped -Element Circuit model for a Transmission line. Wave propagation. Field Analysis of two wire & Co-ax Transmission Lines. Terminated transmission line. Reflection coefficient

Rectangular and Cylindrical waveguide: Design & analysis to support various modes.

Field solution for TE and TM modes, Field patterns of power flow through waveguide

Mathematical Logic: Propositional Logic, First Order Logic.

Probability & Statistics: Conditional Probability, Mean, Median, Mode and Standard Deviation, Random Variables, Distributions, uniform, normal, exponential, Poisson, Binomial.

Set Theory & Algebra: Sets, Relations, Functions, Groups, Partial Orders, Lattice, Boolean algebra.

Combinatorics: Permutations, Combinations, Counting, Summation, generating functions, recurrence relations.

Calculus: Limit, Continuity & differentiability, Mean value Theorems, Theorems of integral calculus, evaluation of definite & improper integrals, Partial derivatives, Total derivatives, maxima & minima.

Personal Interview:

The personal interview is mandatory for all the candidates. It will be conducted on the same day of the written test and may continue for the next day if necessary. Candidates

are required to bring their all original academic testimonials along with a set of photocopies of those testimonials for verification during the personal interview.

Final Selection:

The final selection shall be based on the candidates' performance in the following taken together (non availability of any one of the below mentioned components shall result in cancelation of candidature):

- Performance in the written Test/ GATE Marks out of 100.
- Performance in the personal interview.
- Career Marks.

The selected candidates shall be informed by mail. The same information shall also be available in the institute website.

Candidates, who are selected for admission based on the choice of programme exercised by them, must indicate their acceptance of the admission offer and all related conditions by paying the first instalment of fees as detailed in the offer of admission, before the date mentioned therein.

The classes are expected to begin by August 2016. At this time, the students will be given a manual of policies and regulations, which will be binding on them.

Publication of Admission Results

The Admission results will be published in several rounds. The date for publication of the results in different rounds will be posted in the admission website.

The candidates will be required to pay Rs. 50000/- as a token of acceptance of the admission by the date specified in the admission offer letter / email.

The admission offer to the candidates who fail to pay the amount in time will be withdrawn.

For the seats remaining vacant, admission offer shall be made to the candidates in the waiting list in the subsequent round.

A candidate who has accepted the offer may withdraw by sending an email to the admission office. The admission office will seek confirmation of withdrawal before effecting the same.

Policy regarding refund of amount paid for acceptance of admission offer

- Candidates who are offered admission and have accepted the offer may withdraw.
- If a candidate, who is offered admission in a certain round and has paid the admission fee, withdraws before the next round of results are declared will be refunded the entire amount less Rs. 1000. For example, if a candidate was offered admission in 2nd round and withdraws before the third round of results are declared, an amount of Rs.49000 (Rs.50000 – Rs.1000) will be refunded.
- If a candidate, who is offered admission in a certain round and has paid the admission fee, withdraws after the next round(s) of results are declared will be refunded the entire amount less Rs. 1000 and Rs. 3000 multiplied by the number of rounds. For example, if a candidate was offered admission in 2nd round and withdraws after the fourth round of results are declared, an amount of Rs. 43000 (Rs.50000 – Rs.1000 - Rs.3000*2) will be refunded.

- If a candidate, who is offered admission in a certain round and has paid the admission fee, withdraws after the final round of results are declared and the classes commenced, will be not be refunded any amount.
- Amount to be refunded due to withdrawal from admission shall be done in the month of August 2016 after the admission process is completed.
- The refund will be done through NEFT to the bank account mentioned in the application form.

Fees:

The Fee Structure for the M.Tech. Programmes is given below.

Component	Amount
Tuition Fee	55,000 per Semester
Library & IT Services	6,000 per Semester
University Regd. Fee	5,000 One Time
Institute Caution Deposit	13,000 One Time Refundable
Examination Fee	1,500 per Semester
Student Welfare	1,000 per Semester
Hostel Accommodation	8,500 per Semester
Mess Fixed Overhead Charges (to be paid by all)	2,250 per Semester
Power Backup Charges	As per Actual
Life & Health Insurance	As per Actual
Bus Fee (for Hostel Boarders Only)	As per Actual

Other expenses such as mess meal charges, stationary, supplies, travel, notebook PC etc. is to be borne by individual students.

Aid and Scholarships

For M.Tech. (CSE):

Scholarships are available for GATE (CS) Qualified students as per AICTE rules. Governing Body Scholarship of Rs. 20,000/- per year shall be awarded to the topper of the batch based on their academic performance in each year.

For M.Tech. (Communication Engineering & Signal Processing)

Candidates should take note that at present AICTE scholarships are not available for GATE (EC/IN/EE) Qualified candidates who wish to take admission in M.Tech. (Communication Engineering & Signal Processing) as the approval from the AICTE is not available for the programme. However the Governing Body Scholarship of Rs. 20,000/- per year shall be awarded to the topper of the batch based on their academic performance in each year. Bank loans are available in generous terms that cover all the costs for completing the programme.

The Institute scholarship for a few GATE qualified students of M.Tech. (CESP) is under active consideration.

Resources and Infrastructure

The Campus

Our campus is located at Gothapatna, Bhubaneswar. It is a compact 23 acres campus which houses classrooms, laboratories, library, hostel, faculty living quarters, sports facilities, auditorium and more.

Library

For a Knowledge based organization, Library is a vital asset. The IIIT Library has excellent collection of books and journals on Technology, Management, and related subjects.

The collections also include working papers, audiovisual resources, dissertations, summer projects, annual reports of corporate houses and bound volumes of periodicals.

Besides the print materials, IIIT Library has subscribed to various e- resources. Some of the notable e-resources available are all publications of IEEE Computer Society and ACM Digital Library.

In addition, the Library has a good collection of ebooks.

Laboratory Facilities

The Information Technology infrastructure is a significant factor in providing quality education. Being an Information Technology Institute, we aspire to provide the IT infrastructure which will empower and inspire to students to innovate and invent. IIIT will be a technology playground imbibing the garage culture which had and continues to create great technologies and products.

All the computers in the Institute are connected to the Campus' LAN. In addition, wireless hotspots are spread all across the campus making it possible to remain connected anywhere in the campus, all the time. Each member of IIIT will have access to a computer and the Internet. All the students will be required to have their own personal Notebook PCs.

Computer LAB for M.Tech has 90 workstations, and Library has 8 workstations. The classrooms are equipped with PCs, Tablet PCs, LCD projectors and multimedia Systems.

The Institute subscribes Internet Access through multiple ISPs including National Knowledge Network (NKN). The total available Internet Speed exceeds 250 MBPS.

The Institute has built an impressive library of software packages useful for IT education. These include Compilers, Office Productivity software, Data Base, Statistics, Operations Research, Graphics etc.

In addition, the Institute is in the process of automating all its Processes including Academic, Financial, Library, Placement and other Processes.

The Institute has a high performance computing (HPC) cluster with a maximum computing capability of 3.4 TFLOPS. This HPC cluster is equipped with 12 computing nodes along with a GPU node. Each of these computing node is an E5-2650 Intel Xeon processor clocked @ 2.0 GHz and the GPU node contains NVIDIA Tesla (Kepler K20) GPU accelerator.

Electronics & Telecommunication Engineering department has Communication and Signal processing research platforms based on MATLAB /Simulink, LABVIEW and Xilinx FPGA. Students can carry out both software and hardware based research projects related to communication and signal processing. Department has hardware platforms from National Instruments, Texas Instruments, Xilinx like Speedy 33, Smart Camera, TMS 6713 etc.

Placement

Campus placement is an important deliverable from any higher form of education. IIIT-BH is fully aware and conscious of this fact. We are happy to inform that all the students of M.Tech. (Computer Science & Engineering) have been successfully placed in Academic Institutions and Industries.

IIIT-BH believes that the campus placement is a result of the quality of our students and the rigour of our process. Our programmes and processes of delivery will make our students Industry Ready.

IIIT-BH has included industry interaction as an important component of our curriculum design. Leaders from the Industry, experts from the industry share their valuable expertise and experience with our student. This helps students in many ways. The students are sensitized to the industry requirements and hence prepare themselves to be suitable for industry. They learn practical tricks of the trade from the interaction with the experts. They also learn business practices as it happens in industry.

Industry internship is designed to help discover industry practices from within the industry. Working on practical projects will challenge the students to blend their knowledge with demands from the peers and customers which is a key requirement of the Industry readiness.

Reservation of Rights

This bulletin is applicable for admission to 2016-2018 batch only. However, IIIT Bhubaneswar reserves the rights to make any changes in the requirements of admission guidelines, curriculum, fees and regulations affecting students should these be deemed necessary in the interest of the students, the Institute or the profession. Changes, regulations, enactments, if any owing, to any regulatory bodies shall be applicable to the Institute and the students. Any disputes regarding any related matters shall be subject to the legal jurisdiction of Bhubaneswar only, and ought to be raised within one month of declaration of the final results.