

## **PROSPECTUS FOR**

- 1. M. E (Mechanical - CAD/CAM)**
- 2. M. E (Mechanical - Tool Design)**
- 3. M. E (Mechanical - Design for Manufacture)**

**2016-17**

**Conducted in collaboration with  
University College of Engineering, Osmania University,  
Hyderabad – 500 007**

## **ABOUT CITD**

The Central Institute of Tool Design (CITD) is an ISO 9001:2008, ISO 29990:2010, ISO 14001:2004 & ISO 50001 : 2011 Certified premier Institute in India providing specialized training courses in Tool Design & Manufacture / CAD / CAM / CAE, ESDM, Mechatronics & Robotics. The Institute was established in the year 1968 by the Government of India with the assistance of UNDP and ILO as an executing agency. CITD was converted into a Government of India Society in 1970 under the administrative control of the Ministry of MSME. The Development Commissioner, Ministry of MSME is the ex-officio Chairman of the Governing Council. The Principal Director is the Chief Executive Officer of the Institute.

## **AIMS & OBJECTIVES**

- a. Training of technical personnel in Design and Manufacture of Jigs & Fixtures, Dies & Moulds, Press Tools, CAD/CAM, CAE, ESDM, Mechatronics & Robotics.
- b. Provision of advisory, consultancy and common facility & service to small scale units including assistance in the design and development of tools for various processes, Calibration of Mechanical Measuring Instruments.
- c. Recommending measures to standardize tools and tooling elements, components of Jigs & Fixtures, Dies & Moulds, Press Tools and other Tools.
- d. Production of Jigs & Fixtures, Press Tools, Dies & Moulds, Gauges and Special Cutting Tools subject to the condition that the job works undertaken by the Institute should suit to the needs of the training.

The Institute has a well equipped Tool Room with sophisticated CNC machines like CNC EDM (Charmilles Roboform 54), CNC Wirecut EDM (AGIE Cut Classic-III & Electronica), 4-Axis & 5-Axis High-Speed Machining Centres, and 3D Coordinate Measuring Machine with Scanning & Digitization facilities. The Institute is equipped with latest version of EMCO Table Top/ MTAB CNC Turning and Milling machines with closed loop system to impart training in CNC Programming.

The Calibration laboratory is set up in CITD with Universal Horizontal Meterscope ULM OPAL600 Carl Zeiss Technology, Germany and Slip Gauge Measuring Unit 826 with Millitron 1240, Mahr, Germany to Calibrate Limit Gauges, Micrometers, Dial Indicators, etc.

The CAD/CAM Centre is equipped with latest hardware like latest Configuration workstations Systems and softwares like AutoCAD, Pro-E, CATIA, ANSYS, Hypermesh Unigraphics, Master CAM, Del CAM, Nastran & Patron, ABACUS, LS-DYNA, Q-FORM, SOLIDCAST, etc.

The Institute is also equipped with an Automation Centre with Programmable Logic Control Systems; Hydraulic, Pneumatic, Electronic Controls with Simulators.

The Institute has a special Library with a collection of technical books in Tool & other Engineering fields and subscribes to various International journals like CIRP Annals, American Machinist, Journal of Engineering Materials & Technology (ASME), Precision Engineering (JAPAN) and Precision Tool Maker, etc. The Documentation Centre collects and organizes information and data useful for the technological advancement in Tool Engineering. For the dissemination of information, the centre publishes a computerized current awareness abstracting bulletin and provides technical enquiry service.

The Institute also extends its services to the developing countries by imparting knowledge and necessary skills to their personnel in the field of Tool Design, CAD/CAM, VLSI & Embedded Systems, Automation, Mechatronics & Robotics.

## **ABOUT UNIVERSITY COLLEGE OF ENGINEERING (AUTONOMOUS), OSMANIA UNIVERSITY, HYDERABAD**

The University College of Engineering (Autonomous), a Premier Institution of the Osmania University came into being in the year 1929, and it perceives its mission as follows:

To meet the short and long-term Engineering man power needs for social, industrial and economic development of the region and the nation through teaching and research, industrial consultancy and community service.

To promote learning in an environment conducive to free thinking and promotion of innovation.

To cultivate the skills, attitudes and habits of life – long learning, so as to be well prepared to adapt to a rapidly evolving society and the continued demands for new knowledge and skills.

To contribute to the advancement of knowledge in engineering service and technology, as well as to provide new and deeper understanding of the engineering process implicit in nature, and for the solution of engineering problems to make human living more comfortable.

To be judged by the highest standards of teaching and research, ethics and integrity, morality and humanism.

Post Graduate programmes that prepare students to contribute to advances in engineering developments in the industry and for the community, through courses in M.E./M.Tech. Degree programmes as well as by research (M.S.)

### **ABOUT POST GRADUATE PROGRAMMES**

The Central Institute of Tool Design is conducting fulltime Post Graduate programmes in Collaboration with University College of Engineering, Osmania University, in:

1. M. E (Mechanical - CAD/CAM)
2. M. E (Mechanical - Tool Design)
3. M. E (Mechanical - Design for Manufacture)

Post Graduate programmes in Engineering prepare the students to enhance their interest and develop skills in specialized areas in the above fields.

**DURATION** : 24 months (4 Semesters)

**Age** : No age limit. However, candidates below 45 years of age are preferred.

### **ELIGIBILITY**

#### **FOR SELF SPONSORED**

#### **M.E(Mech. – CAD/CAM):**

B.E./B.Tech.in Mech./Production / Mechatronics or equivalent. Minimum of 55% marks in the qualifying examination from the Institutions approved by AICTE.

#### **M.E(Mech. - Tool Design):**

B.E./B.Tech. in Mech./Production/Mechatronics or equivalent. Minimum of 55% marks in the qualifying examination from the Institutions approved by AICTE.

## **M.E( Mech. - Design For Manufacture):**

B.E./B.Tech. in Mech./Production/Mechatronics/Automobile/Aeronautical or equivalent. Minimum of 55% marks in the qualifying examination from the Institutions approved by AICTE.

### **FOR INDUSTRY SPONSORED CANDIDATES**

**i)** The candidates must have a minimum of two years of full-time professional work experience after passing the qualifying examination in a Registered Firm/Company/Industry/ Educational and Research Institutions/ Govt. Department/ Department of Govt. Autonomous organizations in the relevant field in which admission is being sought.

**ii)** There will be no age restriction. However, preference will be given to those who are below 45 years of age.

**iii)** A letter from the employer must be furnished sponsoring the candidate for admission into M.E. (Mech. - CAD/CAM) / M.E. (Tool Design)/M.E. (DFM). The employer should also indicate that the candidate sponsored will not be withdrawn midway till the completion of the course.

**iv)** The mode of selection shall be based on merit in the written test conducted by University College of Engineering, Osmania University, Hyderabad.

**v)** Rank holders of Gate also need to qualify themselves in the entrance examination.

### **COURSE FEE**

#### **FOR SELF SPONSORED:**

The candidates selected have to remit course fee of Rs. **41,000/-** per semester at the beginning of each semester either in Bank Challan or DD in favour of the Principal Director, CITD, Hyderabad.

#### **FOR INDUSTRY SPONSORED CANDIDATES:**

The candidates selected have to remit course fee of Rs. **51,000/-** per semester at the beginning of each semester either in Bank Challan or DD in favour of the Principal Director, CITD, Hyderabad.

In addition, the candidates have also to pay one time Autonomy fee of Rs.7,500/-(OU Autonomy) at the time of admission.

### **ADMISSION**

The candidates may download the application from our website [www.citdindia.org](http://www.citdindia.org) or can collect at CITD personally. The hard copy of the filled in application form along with photo copies in proof of age, pass of qualifying examination and caste/PWD wherever applicable should be sent to Director (Trg) CITD, Hyderabad, enclosing with the copy of challan for cost of application fee.

Admission is purely based on the rank obtained in the Entrance Test to be conducted by University College of Engineering, OU, Hyderabad.

Rank holders of Gate also need to qualify themselves in the entrance examination.

The selected candidates have to remit course fee at the beginning of each semester either in cash or DD in favour of the Principal Director, CITD, Hyderabad.

## **LIST OF DOCUMENTS TO BE ATTACHED With THE SPONSORED APPLICATION FORM**

- i) Degree/Provisional certificate B.E./B.Tech./AMIE (only attested true copies)
- ii) Previous service certificates, if any.
- iii) Sponsoring letter from present employer.
- iv) SSC Certificate (for date of birth).
- v) Income certificate.
- vi) Conduct certificate from the Principal of College concerned / Head of the Department where last studied or from a Gazetted Officer.

### **PROVISIONAL LIST OF SELECTED CANDIDATES**

The provisional list of selected candidates will be displayed on the Notice Board of Central Institute of Tool Design, Balanagar, Hyderabad, and University College of Engineering, Osmania University, Hyderabad.

Candidates have to be present themselves on the date of counseling with all original certificates & prescribed fees in cash/DD to be considered for admission on the dates announced at 10.00 a.m., for full-time M.E. (Mech. CAD/CAM) / M.E. (Mech. Tool Design), M.E. (Mech. Design For Manufacture), at CITD, Balanagar, Hyderabad.

For seats falling vacant, if any, such candidates desirous of seeking admission in the second & final phase of Counseling have to be present themselves on the date announced at 10.00 a.m. with all original certificates and prescribed fee in cash/D.D., failing which they shall not be considered for admission.

### **COURSE REQUIREMENT**

- a) The course requirement comprises of successful completion of a minimum of 12 theory subjects (6 core + 6 electives) 2 lab /2sem, one design /mini project, two seminars and a dissertation.
- b) Instructions in each theory subject shall be three periods per week. Practicals and seminars shall be as per the approved scheme of Instruction.
- c) Students, on being admitted to the M.E. (Mech. – CAD/CAM)/M.E. (Mech. - Tool Design)/ M.E.( Mech.- DFM) course shall be assigned to Faculty. The student shall draw up a study plan to satisfy all the requirements, keeping in view the area of specialization and then register for the subject.
- d) A student is permitted to register for a maximum of 6 theory subjects, a practical and a seminar in a semester.
- e) The Registration of the candidates should be made within one week from the date of admission for the 1st Semester and within one week from the date of commencement of classes for subsequent semesters.
- f) A student is permitted to register for Project/Dissertation only after completion of 12 theory subjects and all other departmental requirements. A student who successfully completes all the course requirements except Project/Dissertation may be permitted to work on his Project/Dissertation.
- g) A student shall submit 5 copies of the Project Report/Dissertation prepared as per the format prescribed by the Faculty and approved by his/her guide after the last working day of the semester in which he/she has registered for the Project/ Dissertation.
- h) Theory classes, seminars etc, will be conducted for three days at Department of Mechanical Engineering, O.U., and Theory classes, Practicals, etc., will be conducted for the remaining three days at CITD.

## SCHEME OF INSTRUCTION and EXAMINATION

The Scheme of Instruction and Examination are as per the norms of Osmania University from time to time.

### AWARD OF DIVISION

A candidate shall be deemed to have fully passed in the subjects, if he/she has registered during the semester if he/she secures not less than the minimum marks prescribed below.

Subject	Min. Marks/Grade
Each theory subject (CIE+SEE)	50% (C Grade)
Each laboratory course (CIE)	-do-
Each seminar (CIE)	-do-
Dissertation Seminar (SEE)	-do-
Dissertation (SEE)	-do-

As per the syllabus and structure, candidates have to complete 12 theory subjects, dissertation and departmental requirements (Seminar, Mini Projects, Practicals) for the award of Degree –

- \* First Class with Distinction - CGPA 8 and above
- First Class - CGPA 7 and above but less than 8
- Second Class - CGPA 6 and above but less than 7

\*Candidates are eligible for the award of First Class with Distinction with CGPA of 8 and above in Single attempt

### AWARD OF DEGREE CERTIFICATE

The Osmania University will award the Degree certificates for successful candidates.

### DOCUMENTS TO BE HANDED OVER AT THE TIME OF JOINING

**a) Original certificates of qualifying examination, i.e., SSC/Metric/ B.E. The original certificates will not be given back to the trainees under any circumstance till they complete the scheduled training period at this Institute.**

**b) Certificate of Physical fitness from any Assistant Civil Surgeon. The Institute reserves the right to send the candidate for further Medical examination, if necessary.**

**c) The trainee should give an undertaking for good conduct and behaviour and to abide the rules & regulations as prescribed by the Institute.**

### GENERAL RULES REGARDING RESERVATIONS OF SEATS FOR SC/ST/PWD CANDIDATES

a) SC/ST candidates who get seats by merit in general category will not be counted against the seats reserved for them and such candidates will go into the list of general seats.

b) If sufficient number of candidates are not available to fill-up the seats reserved for SC category they shall be filled up by the suitable candidates from ST category and Vice-versa. If, the required number of candidates are not available for filling the SC/ST reserved quota, the seats will be filled up by candidates from the general category on the basis of merit.

c) Candidates claiming reservation under SC/ST/OBC category are required to produce a certificate from the competent authority.

d) The candidates claiming reservation under Persons With Disability category, is subject to production of a medical certificate from competent authority.

e) If no candidate under Persons with Disability category is available, the seat will be filled by the candidate from Non-sponsored General category on the basis of merit.

### **SCHOLARSHIPS**

No candidate is eligible for any Scholarship from the Institute/Osmania University or A.I.C.T.E.

### **GENERAL TERMS AND CONDITIONS.**

a) The Institute reserves the right not to conduct any course at its sole discretion.

b) The course fee for next semester should be paid i.e. by **31st January/31st July** every year. A late fee of Rs. 1000/- per week subject to the maximum of two weeks will be levied if the semester fee is not paid in time. Thereafter defaulters are liable to be terminated from training. Their results of previous semester will be with held and they will not be allowed to attend the next semester.

c) The candidates have to place a caution deposit of Rs.1,000/- at the time of admission refundable on completion of the course. If the trainees causes any damage to the Institute property, the caution deposit will not be refunded.

d) No traveling allowance or any other allowance will be paid for attending entrance examination, joining the course or on termination thereof.

e) Limited hostel facility is available and the candidates are advised to make their own arrangements for boarding and lodging.

f) The student shall not cause any damage or loss to the property of the Institute / University, failing which they are liable to bear the loss.

g) Any information given in the application by the candidate, if found incorrect after selection to the course, is liable for such punishment as may be deemed fit including his/her disqualification and/or dismissal from the course.

h) Once the selected candidates report for the course and pay the fee by the prescribed date, the admissions are treated as closed and the waiting list ceases.

**Fee once paid will not be refunded.**

i) The Institute reserves the right to terminate the student at any time at its discretion for misconduct/indiscipline, breach of rules, etc. In such an event the course fee paid by the candidates shall not be refunded.

j) The rules are liable for change from time to time depending upon exigencies of the course.

k) All matters concerning the admissions and conducting the courses shall be subject to Hyderabad jurisdiction only.

## **THE CLASSES WILL BE CONDUCTED AT THE FOLLOWING PLACES:**

1. Mechanical Engineering Department, University College of Engineering, Osmania University, Hyderabad.

M.E (Mech. – CAD/CAM)  
M.E (Mech. – Tool Design)  
M.E (Mech. – Design For Manufacture)

Thursday, Friday & Saturday (from 9.00 A.M to 5.30PM)

2. At Central Institute of Tool Design, Balanagar, Hyderabad

M.E (Mech. – CAD/CAM)  
M.E (Mech. – Tool Design)  
M.E (Mech. – Design For Manufacture)

Monday, Tuesday & Wednesday (from 9.30 A.M to 6.00PM)

## **HOLIDAYS & WORKING HOURS**

- a) The Institute is following the holidays as applicable to Central Government.
- b) The Institute working hours are from 9.30 A.M. to 6.00 P.M.
- c) The Institute will work on 2nd Saturday.
- d) Weekly holiday – Sunday

## **SYLLABUS FOR ENTRANCE EXAMINATION** (Online/ off line, Objective type)

M.E (Mech. - CAD/CAM)  
M.E (Mech. - Tool Design)  
M.E (Mech. - Design For Manufacture)

### **1. Element of Material Science: Ref: V. Raghavan**

Structure of Metals, Bonding in solids, imperfections of metals, imperfections in crystals, fracture, creep, fatigue and corrosion.

### **2. Engineering Metallurgy: Ref: D. Swarup**

Structure of alloys, manufacture of iron and steel, heat treatment of steels, alloy steels, properties and use of common non-ferrous metallurgy, weldability of metals. Materials used for various applications

### **3. Kinematics of Machines: Ref: Thomas Bevan**

Velocity and acceleration of simple mechanisms with lower pairs, Cam motions and profiles, friction, belt rope and chain drives, toothed gearing and gear trains, brakes and dynamometers.

### **4. Dynamics of Machines: Ref: (i) Shigley (ii) Thomas Bevan.**

Static and dynamic force analysis, flywheels, gyroscopes, vibrations, balancing governess.

### **5. Design of Machine Elements: Ref: Shigley, J.E.**

Design considerations, design of joints, shafts, bearings, couplings, belt drive, gear drive, power screws, springs, cranks, connecting rod, piston, eccentric, cross head and flywheel.



## **6. Basic Thermodynamics: Ref: Vam Wylene**

Thermodynamic system, temperature, work, heat, first law of thermodynamics, ideal gas, gas mixtures, carnot cycles, reversed carnot cycle, C.O.P., second law of thermodynamics and their corrolaries, properties of pure substance, air standard cycles, psychrometry.

## **7. Reciprocating Engines: Ref: E.H. Lewit, V.L. Malleen**

I.C. Engines, classification, working and performance of I.C. Engines, combustion, problems in I.C. Engines, rating of fuels, combustion chambers, reciprocating air compressors and steam refrigeration.

## **8. Turbo machines and Compressors: Ref: P.L. Ballaney**

Flow through turbo machines, rotary blowers and compressors, flow through nozzles, steam turbines, gas turbines, jet propulsion.

## **9. Heat Transfer: Ref: Gupta and Prakash**

Conduction, convection, heat exchangers, radiation, condensation and boiling.

## **10. Hydraulic Machines: Ref: Jagadishlal**

Impact of jets, turbines, centrifugal pumps, reciprocating pumps, ram, accumulator, intensifier.

## **11. Instrumentation: Ref: R.K. Jain**

Basic standards, analysis of experimental data, resistance strain gauge, measurement of displacement, temperature, flow force torque, vibrations, acceleration, pressure measuring transducers, photo elastic stress – strain analysis.

## **12. Industrial Management: Ref: O.P. Khanna**

Industrial organization, plant layout, material handling, production planning and control, materials, management, work studies, inspection, quality control, cost analysis, operations research.

## **13. Foundry, Welding and Forging: Ref: (i) Rosenthal (ii) O.P. Khanna, (iii) Kovan**

Pattern making, moulding, core making melting, cleaning and inspection, heat treatment.

## **14. Metrology and Machine Tools: Ref: (i) Jain (ii) Chapman**

Standards of measurement, limits, fits, gauges, measuring instruments, semi automatic lathes, drilling, shaping, planning, slotting, milling, gear cutting, broaching and grinding machines.

## **15. Metal Cutting: Ref: Bhattacharya**

Physical and thermal aspects of metal cutting, tool wear and tool life, kinematics of machines tools, micro finishing machines ECM, EDM and USM. Plastics, NC machines, jigs and fixtures.

## **ENTRANCE EXAMINATION WILL BE HELD AT:**

Main Building, University College of Engineering, Osmania University, Hyderabad-500 007

**Note:** The list of eligible candidates for writing the Entrance examination may be seen from the Institute's website [www.citdindia.org](http://www.citdindia.org). The eligible candidates who have not received Hall Tickets, can collect Duplicate Hall Tickets in person by producing one passport size photograph at CITD., Balanagar, Hyderabad and also at the examination centre one hour before the commencement of the examination. The Institute is not responsible for any postal delay or delay in collection of Hall Ticket as per schedule by the candidates.

### **IMPORTANT DATES**

Sale of Applications From	:	26.05.16 (Thursday)
Last date for receipt of filled-in applications	:	18.06.16 (Saturday)
Last date for receipt of filled-in application with late fee of Rs.500/-	:	25.06.16 (Saturday)
Entrance examination	:	03.07.16 (Sunday)