

# IIT Kharagpur Inter Disciplinary Dual Degree Program

## Brief Introduction

Interdisciplinary Dual Degree Program is a unique program in which a student can pursue a Bachelor's degree in his parent department and a Masters degree in a department of his choice (Host Department).

Currently, students can do a Dual Degree Project in a Dept. other than their own subject to availability of a guide in the Dept. of choice and a co-guide in the parent Dept.

Interdisciplinary dual degree takes it a step further in allowing the student to do PG level courses and electives in the Dept. of his/her choice together with the DDP (Equivalent to Master's degree credits), and get a Master's degree in that department.

## Why is it needed?

1. The intermingling of academic disciplines can energize new pursuits and discoveries", taking this motive forward Interdisciplinary Dual Degree encourages students and faculty to create new combinations giving a new dimension to the institute research.
2. .The Dual Degree programme being more rigorous gives more in-depth knowledge in a respective field. Student grievances, however, are more directed towards the specialization not being of their choice. Many students suggested that the Dual Degree Programme should be more liberal so that they could align their coursework with their interests.
3. During the time of admission, departments are chosen based on the JEE Advanced Rank and trends in the previous year. In this scenario, it is very unlikely that the student would have an actual idea of the coursework. During his Bachelor's study, a student, being exposed to different fields might be inclined towards a particular field outside his department. In such cases, if he wishes to pursue a Master's in that area of interest, InterDisciplinary Dual Degree Programme would be very helpful.
4. For example, a student of 'Electrical Engineering' Department after being exposed to various courses of the 'Computer Science and Engineering' Department in his initial years of study can become interested in a particular field and may wish to pursue a Masters Degree in that Field. Such a student, originally enrolled for just a Bachelor's degree, will be able to complete his Masters in the institute itself within 5 years as a regular dual degree student. This has a major advantage: If at all an IIT student wishes to pursue a Masters Degree, going abroad would be given the first preference. Nowadays, due to several global issues related to immigration, Brexit, getting into elite institutions abroad poses several financial, employment and

immigration challenges. Hence getting an Interdisciplinary Dual Degree would be beneficial which improves job perspectives and also relatively easier to complete.

5. This will go a long way in improving the research output from students as more students would be enrolling in the dual degree programme out of sheer interest. Students would be able to devote to the institute their passion and zeal in the area that actually interests them.

## Where do we stand?

Currently, the institute offers highly specific Interdisciplinary Dual Degree Programs. Students who have taken admission to a 4-year B.Tech/5 year Dual Degree program can opt for an Interdisciplinary Dual Degree at the end of their first year.

A student can do a B.Tech in any engineering discipline and pursue an interdisciplinary course in one of the following disciplines:

- M.Tech. in Financial Engineering
- M.Tech. in Engineering Entrepreneurship
- M.Tech. in Transdisciplinary Programme in Petroleum Engineering (TPPE)

In addition, the Dual Degree Program in Quality Engineering and Engineering Design is a unique program that offers two verticals, one in Mechanical Engineering and the other in Industrial Electronics.

## Salient features of the program

The program intends to allow students enrol for a Masters degree in the department of his/her choice subject to approval from both the departments - the one in which the student will complete Bachelors and the one in which he will complete his Masters. The whole model can be constructed based on the following points:

1. The student is required to submit the entire coursework plan at the end of the third year for the remaining two years and seek approval from Heads of both the departments. Three years can be taken as the ideal time for exploring one's interests.
2. The Departmental UG Committees of both the departments can set a CGPA cutoff for allowing the Interdisciplinary Dual Degree Program. The student is expected to meet both the cutoffs in order to pursue the Interdisciplinary Program. This can be done similar to the lines of setting a cutoff for converting to a regular dual degree in the department
3. The student should have completed a fixed number of credits in the host department (To be decided by the host department's UG Committee). All the prerequisite courses in order to pursue a Masters in the host department will be decided by the same committee.
4. The Department UG Committee and Head of the Department of the host department will be solely responsible for setting the required criteria for selection into Master's

Program. This might constitute an interview, written exam or a viva-voce; whichever the department feels is the most suitable process.

5. The student needs to complete the credit requirements of both the Bachelors in parent department and the Master's in the department opted for.
6. The student will be awarded both the degrees together at the end like a regular dual degree.

## Miscellaneous factors:

1. The student can be assigned a Faculty Adviser in the Master's department as well and the responsibility of the student for administrative matters can be shared by the two departments in the fourth year of study and be passed on to the Master's department in the fifth year of study. The finer details can be ironed out.
2. The student will be awarded both the degrees together at the end like a regular dual degree.

## Summary of the proposal:

1. Allow students to convert into a Masters of their choice at the end of the third year to earn a Dual Degree at end of the fifth year.
2. Requirements: Complete coursework plan for remaining two years. Both the departments can decide on the CGPA criterion to allow for such conversions.
3. The exact selection criterion can be decided upon by the Masters' department including Department's UG Committee and Head of the Department.

## Annexure

### Case Studies

### Dual Degree and Double Major programs at IIT Kanpur

#### Dual-Degree Bachelor's-Master's Dual Degree:

This is a five-year programme in which a student earns a Bachelor's and a Master's degree. The dual degree programme has three categories:

**Category A:** In this case both degrees are in the same discipline/department. There are two combinations in this Category – BTech-MTech and BS-MS.

**Category B:** This is a two discipline/department programme where the Bachelor's degree is in the parent discipline/department and the Masters degree is in a different discipline/department. Thus six degree combinations are possible in this category: BTech-MTech, BTech-MS, BTech-MDES, BS-MTech, BS-MS, BSMDDES.

**Category C:** In this case the Bachelor's degree is in the parent discipline/department and the Masters degree is MBA. Thus the two possible combinations are BTech-MBA and BS-MBA.

### MSPD Dual Degree:

A 2-year MSc student may apply for a dual degree combining Master's with a PhD in departments where this is allowed.

### Double Major:

This is a five year programme for a Bachelor's degree with majors in two departments/disciplines that offer BTech/BS degrees. The first major is in the parent department, while the second major is in the department to which the student is admitted for this purpose after the 4th semester.

Students who opt for a Double Major are required to complete Departmental Compulsory Courses and, in some cases, Departmental Electives in their second major discipline, in addition to completing all the requirements of their parent discipline. The courses taken in the second discipline will provide a knowledge-base in this discipline which is comparable to students' knowledge-base in their parent discipline. The Institute Core courses will obviously be done only once.

## 5-year Dual Degree Program (Dept of Applied Mechanics IIT Madras)

This program enables an engineering student to develop skills that help him to acquire and apply new scientific knowledge from diverse engineering fields. With this foresight and by virtue of its interdisciplinary composition, the Department of Applied Mechanics, IIT Madras has introduced a unique interdisciplinary Dual Degree Program along with the Departments of Aerospace Engineering, Civil Engineering, Electrical Engineering and Ocean Engineering.

The Department offers specializations in the areas of Bio-Medical Engineering, Fluid Mechanics and Solid Mechanics.

Choice of specialization topic: Students can choose their specialization in their MTech programs at the end of the 7th semester based on their individual choice, performance records and availability of seats in the specialization group.

On successfully completing 5 years, the students of this program earn dual degrees:

- BTech in Aerospace/Civil/Electrical/Ocean Engineering and
- MTech in Applied Mechanics with appropriate specialization.