



# Innovations in Teaching and Learning

Department of Biotechnology  
Jaypee Institute of Information Technology  
A-10, Sector-62, ,Noida-201 309,Uttar Pradesh, India.





# Traditional Pedagogies

Holds significant importance in education for several reasons such as:

- Aid in the acquisition of fundamental knowledge
- Developing cognitive skills through repetitive practice and rote learning
- Easy implementation and Universal accessibility (requiring minimal resources)

## **Various methods employed by faculty-**

Lecture delivered through chalkboards, group discussions, use of reference textbooks, hands-on experiments and demonstrations in laboratories, etc.





# Integrating innovative strategies

- Traditional methods are integrated with modern strategies for catering to diverse learning needs and promoting holistic development.
- Some of the innovative methods that leverage technology, collaboration, and real-world application include:




01

# 1. Project-Based Learning (PBL)





# Project-Based Learning (PBL)


- Each course incorporates a PBL component that involves students working on projects based on real-world problems or scenarios.
  - They individually or in the team, investigate, analyse, and solve problems, while gaining deeper understanding of subject matter and developing critical thinking, problem-solving, and collaboration skills.
  - For example in the course Antimicrobial Resistance (16B1NBT632) under PBL, 4 students of VI<sup>th</sup> Sem (Even 2023), created a video for educating and spreading awareness on Antimicrobial Resistance – A global concern
- 

# Evidence for Project-Based Learning (PBL)





# CONCLUSION

- Overuse and misuse of antimicrobials.
  - Use of antibiotics in agriculture and animal husbandry.
  - Limited development of new antimicrobial agents.
  - Lack of public awareness and education about proper use]
- 




# SIGNIFICANCE OF VIDEO



Engaging and memorable.

Uses visuals to explain complex concepts. Evokes emotions in viewers.

Highly shareable on social media and other platforms





02

# Cross level Peer Mentoring



# Cross level Peer Mentoring

- Peer teaching involves students teaching and learning from each other.
- This can take various forms, such as peer tutoring, group discussions, or collaborative projects.
- Peer teaching not only reinforces learning for both the student-teacher and the student-learner but also fosters communication skills, empathy, and a supportive learning community.

# Evidence for Cross level Peer Mentoring



Week Learner's Mentoring Session- Biopharmaceutics and Pharmacokinetics-Even Sem 2022

shweta.dang to: pammi.gauba  
Cc: 21301001

20-05-2022 15:06

Respected HOD Ma'am

**Ms Nisha Sharma** ( enrollment no. 21301001), currently, M Tech II sem (Biotechnology) program and a senior student who was awarded A+ in the reference course shall be mentoring following students of elective course Biopharmaceutics and Pharmacokinetics course this semester -

S.No.	Enrollment Number	Name of the student
1	18101009	KUMARI ANUSHKA ROSHAN
2	18101021	Tejasvi Sharma
3	18101041	ROSHAN SINHA
4	18101045	SHIVANSH MISHRA
5	18101053	Saurabh Singh Rathor
6	18101046	Tushar Nigam

Ms Nisha Sharma ( enrollment no. 21301001), currently, M Tech II sem Student has CGPA of 9.2 and peer mentoring by her is expected to lead to improvement in the academic performance of the students.

Kindly allow and approve the same

Thanks and Regards  
Dr Shweta Dang

03



# Online Classes and Massive Open Online Courses (MOOCs)



# Online Classes & MOOCs

- MOOCs provide flexible and accessible learning opportunities and offer a wide range of courses taught by experts from around the world, allowing learners to study at their own pace and often at no cost.
- The Department of Biotechnology allows interested students to opt for various online courses classes, available at digital platforms such as MOOCs for **facilitating personalized learning experiences.**

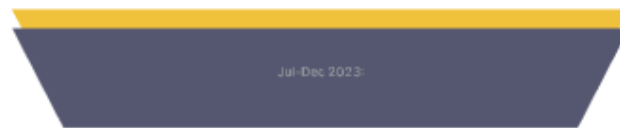
➤ The Department of Biotechnology actively promotes and encourages students to enrol and undertake MOOCs courses across disciplines from the SWAYAM platform. We have a provision for credit transfer as per AICTE/UGC regulations.

➤ In the Jan-Apr 2024 semester, currently there are more than 250 enrolments in Biotechnology domain subjects

JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY  
A-10 SECTOR 62 NOIDA, 201309  
Url: <http://www.jii.ac.in/>

**SPOC Name - INDIRA P SARETHY**  
**Designation - ASSOCIATE DEAN & COORDINATOR FOR MOOCs**  
**Partnering since - 2018-11-07**  
**College Id - 3251 Institute Type - ENGINEERING, TECHNOLOGY AND MANAGEMENT**

NPTEL is very happy to be associated with JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY institute and its students. We are thankful to INDIRA P SARETHY for being a pillar of support in NPTEL initiatives.



Course Run	Present	Gold	Elite	Silver	Successful	Participation	Topper	Rating	NPTEL
<a href="#">Jul-Dec 2023</a>	87	7	23	38	10	8	12	Active	<a href="#">Details</a>
<a href="#">Jan-Apr 2023</a>	10	1	3	1	1	4	-	-	<a href="#">Details</a>
<a href="#">Jul-Dec 2022</a>	8	0	4	1	3	0	1	-	<a href="#">Details</a>
<a href="#">Jan-Apr 2022</a>	8	0	2	3	2	1	-	-	<a href="#">Details</a>
<a href="#">Jul-Dec 2021</a>	19	1	5	8	1	4	3	Active	<a href="#">Details</a>
<a href="#">Jan-Apr 2021</a>	101	3	20	62	13	3	4	-	<a href="#">Details</a>
<a href="#">Jan-Dec 2020</a>	17	2	4	5	3	3	2	-	<a href="#">Details</a>

04

# Team-Based Learning



# Team-Based Learning

- TBL fosters teamwork, communication, and critical thinking skills while promoting a supportive and inclusive learning environment.
- Collaborative learning strategy where students work in teams to solve problems, analyze case studies, or complete projects. As a part of the curriculum, students in groups carry out their major and minor projects.



# Evidence : Major Project

Group	Supervisor	Sr No.	Enr No.	Student Name	Title of Project
1	Dr Shalini Mani	1	20101003	Sejal	NATURAL COMPOUNDS IN OVERCOMING CHEMORESISTANCE
		2	20101040	Saurabh Dubey	
		3	20101011	Ridhima Saxena	
		4	20101020	Anjali Sharma	
		5	20101046	Chitvan Choudhary	
		6	20801004	Baanipreet Kaur	
2	Prof Indira P Sarethy	7	20101009	Saiantan Ghosh	Assessment of therapeutic properties of Bacillus rugosus, obtained from Gandhak-ki-Baoli
		8	20801001	Ishika Singh Raghuvanshi	
		9	20101029	Radhika Sharma	
3	Prof Neeraj Wadhwa	10	20101043	Kriti Tandon	Mycopigment isolation and their application
		11	20101054	Anupama Das	
		12	20101055	Anvesha Gupta	
		13	20101032	Ishani Bhandari	
		14	20101012	Parnpreet Kaur	
4	Prof Pammi Gauba	15	20101027	Nami Jain	Evaluating the impact of dust deposition on plants
		16	20101036	Shivi Agarwal	
5	Prof Reema Gabrani	17	20101033	Spriha Agarwal	Efficacy of phytochemicals on cancer and related super infection
		18	20101038	Jahnvi Singh	
		19	20801005	Debdarshan Dutta	
		20	20101026	Devatman Jauhari	
6	Prof Sweta Dang	21	20101057	Anushka Dhiman	Website development for Generic drugs
		22	20101048	Aryan Raina	
		23	20101052	Aarushi Katiyar	
7	Dr. Ekta & Prof Sweta Dang	24	20101044	Disha Gupta	Use of Nano-carriers for Cancer therapy
		25	20101013	Akul Goswami	
8	Dr Sonam Chawla	26	20101001	Megha Chouhan	Therapeutic benefits of AMPK activity modulation
		27	20101010	Akansha Zutshi	
9	Dr Pooja Choudhary	28	20101004	Ujala Srivastava	In-depth investigation of drought stress-responsive differentially expressed genes in millets
		29	20101017	Vidisha Gaur	
		30	20101028	Arnav Gupta	
		31	20101042	Ritika Gaur	

# Evidence: Minor Projects

Sr no	Enrollment no.	Student name	Faculty name	Gp No.	Title of project
1	21101001	LAVANYA	Aniruddh	1	Dye Degradation
2	21101002	AISHWARYA VERMA			
3	21101003	MARIYAM KHAN			
4	21101004	SAMPRIKTA PUROHIT	Ashwani Mathur	2	Acoustic mediated phytocompound production in plant systems
5	21101005	AISHWARYA SRIVASTAVA			
6	21101006	YASHIKA GUPTA			
7	21101007	SARTHAK RAI	Chakresh Jain	3	Pharmacogenomics in Parkinson's Disease
8	21101008	SURANJANA BERA			
9	21101009	ANUSHKA NAYAK			
10	21101010	KASHISH GUPTA	Ekta Bhatt	4	STEM CELLS AND ITS APPLICATION IN BIOTECHNOLOGY
11	21101011	MEHEK CHOUDHURY			
12	21101012	ARYAN MISHRA			
13	21101013	MANVI GUPTA	Garima Mathur	5	NUTRIGENOMICS AND PERSONALIZED DIETS
14	21101014	ANSHIKA GUPTA			
15	21101015	MANYA UPRETI			
16	21101016	SHRINJAL GUPTA	Indira P Sarethy	6	Hereditary Neuropathies
17	21101017	ANUSHKA MAMGAIN			
18	21101018	DIVYANSHI AGARWAL			
19	21101019	VYOMINI CHANDEKAR	Indira P Sarethy	7	Pharmacomicrobiomics
20	21101020	AYUSH RASTOGI			
21	21101021	TWISHI OZA			
22	21101022	DIVYA AGGARWAL	Krishna Sundari	8	early stage mental disabilities related to cognition and other abnormalities in children
23	21101023	PRISHA SAKSENA			
24	21101024	ARPIT AWASTHI			
25	21101025	MAITRY GOEL	Neeraj Wadhwa	9	Bioremediation of heavy Metals
26	21101027	KUSHAL GUPTA			
27	21101029	ISHAL SRIVASTAVA	Nidhi	10	

05

## Case based Studies



STRESS : Biology , Behavior & Management  
(PROJECT BASED LEARNING) ①  
NAME : SAI SUDHAN VELU (08/18/2022)  
BATCH : AS  
ENROLL NO : 20102134 10


→ In this project I have approached two people in my close circle and have tried to steer them on a joyful path by becoming their "Happiness Coach".

CASE 1: Saigbav - Close Friend

BEFORE:  
Saigbav, one of my close friends, was visibly stressed due to college placement related challenges. He frequently complained about anxiety attack and was struggling with sleep. His academic performance had declined, and he seemed on edge. Recognizing these signs, I approached him as his "Happiness Coach".



# Case based Studies

- Real-life scenarios or case studies are used to reinforce concepts and principles taught in various courses, promoting critical analysis and decision-making skills.
  - For example in a life skill course - Stress: Biology, Behavior & Management (17B1NBT733), each student was asked to conduct 2 case studies where they first identified factors responsible for stress and then helped them to overcome their stress by becoming their “Happiness Coach”.
- 

## Case based Studies (Evidences)

1. STRESS: Biology, Behavior & Management  
(PROJECT BASED LEARNING) ①  
NAME: SRAISVDHAN VELU (Odd Sem: 202B)  
BATCH: AS  
ENROLL NO: 20102139 10

⇒ In this project I have approached two people in my close circle and have tried to steer them on a joyful path by becoming their "Happiness Coach".

CASE 1: Barghav - Close Friend

BEFORE:

Barghav, one of my close friends, was visibly stressed due to college placement related challenges. He frequently complained about anxiety attack and was struggling with sleep. His academic performance had declined, and he seemed on edge. Recognizing these signs, I approached him as his "Happiness Coach".

METHODS FOLLOWED:-

1) Express Concerns: I expressed my concern for Barghav's well-being by using "I" statements to communicate my observations and assure him of my support.

2) Active Listening: I listened as Barghav shared his stressors at college and

during placement drives and the impact on his overall well-being.

3) Collaborative Problem-Solving: We worked together to identify specific stressors and devised practical solutions, breaking down overwhelming tasks into manageable steps.

INTERVENTION STRATEGIES:

1) Encourage Healthy Habits: I suggested incorporating regular exercise and prioritizing sufficient sleep to enhance resilience to stress.

2) Mindfulness Practices: Introduced simple mindfulness exercises and deep breathing techniques to manage stress.

3) Professional Support: Encouraged Barghav to consider speaking with a professional counselor for additional coping strategies.

AFTER: After few days, Barghav reported feeling more in control during college and placement drives. His mood improved, and he expressed gratitude for the support.



06

Industrial visits  
and Field study



# Industrial visits and Field study

- Provide practical exposure and hands-on experience.
- Facilitate networking opportunities.
- Gain insight into industry trends.
- Explore potential career paths.
- Apply classroom learning in real-world scenarios.



## Industrial Visits :

01

**Mother Dairy  
Manufacturing Plants,  
Patparganj, Delhi-110091**



02



**National Institute of Biologics  
(NIB)**



03

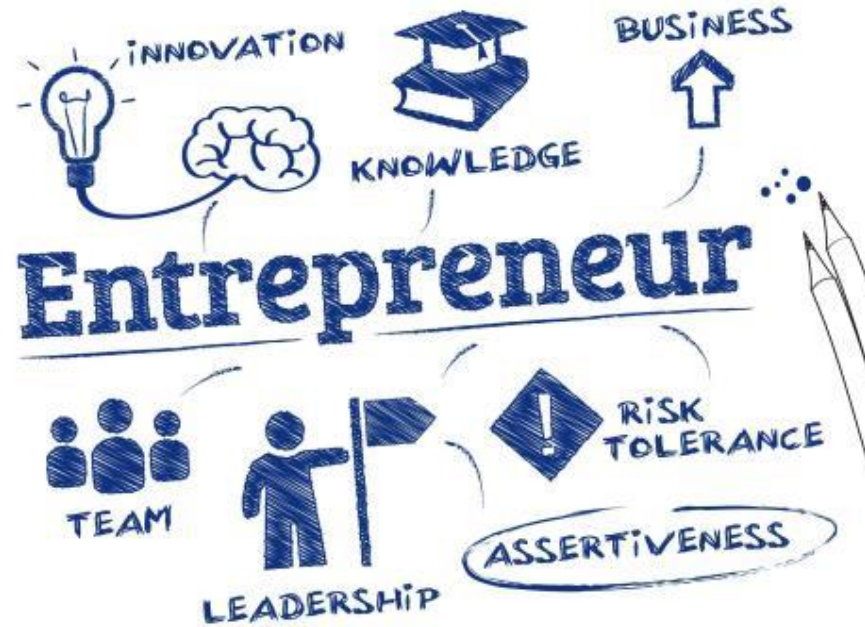
**Foundation for Innovation  
and Technology Transfer  
(FITT), IIT Delhi**





- **Mother Dairy Manufacturing Plants, Patparganj, Delhi-110091** (January 27, 2024):
  - Overview of milk collection process.
  - Parameters tested before processing and packaging.
  - Visit to testing laboratory; hands-on experience with milk parameters.
- **National Institute of Biologics (NIB):**
  - Quality control and quality check processes for biologics.
  - Understanding regulatory standards and practices.
- **Foundation for Innovation and Technology Transfer (FITT), IIT Delhi** (March 3, 2023):
  - Visit as part of IIC 5.0 Quarter II activity.
  - Exposure to pre-incubation units like Ideas Lab, Fab Lab, etc.
  - Interaction with city MSME clusters and workshops.

**The above visits help expose and prepare students for diverse career paths and contribute to their overall professional development.**



**07**

## Promotion to Entrepreneurial skill





# Promotion to Entrepreneurial skill

Directorate of Research, Innovation and Development (DRID), JIIT, Noida.  
support students to execute innovative projects.

- **Faculties assigned as mentors**
- **Funding**

## Recent Project:

- **Grant Amount:** Rs 15,000.
- **Beneficiaries:** B.Tech Biotechnology students.
- **Project Focus:** Production of bioplastic from water hyacinth.
- **Global Challenge :**  
Addresses the global challenge of rampant growth of water hyacinth and aims for environmental sustainability.

DRID/Pre-Startup/ Bioplastic Production

Dated : 06 Feb 2024

To,

Aayush Walia

Parth Sharma

Divyansh Goel

Kushal Gupta

Dr. Garima Mathur (Mentor)

**SUB : SANCTION LETTER**

1. Your project has been approved as per the following details :-

- |                          |   |   |
|--------------------------|---|---|
| (a) Project Title        | : | Bioplastic Production using Water Hyacinth                    |
| (b) Name of the Students | : | Aayush Walia<br>Parth Sharma<br>Divyansh Goel<br>Kushal Gupta |
| (c) Mentor               | : | Dr. Garima Mathur   |
| (d) Department           | : | Biotechnology   |
| (e) Approved Budget      | : | Rs 15,000/- (Rupees Fifteen Thousand Only)                    |
| (f) Equipments           | : |   |

2. The students coordinator / mentor to take the following actions :-

- Students team under the supervision of mentor may start the project work immediately.
- The items mentioned are already approved and can be purchased as per the purchase process followed in JIIT/JIIT/JUET by contacting respective Account/ Purchase Section.
- Faculty mentor may take an imprest and make purchase of the approved items.
- If any other items is required, only in such cases, the approval is required.
- It may be noted that the progress of these projects will be reviewed regularly on monthly basis.

Prof BR Mehta  
Vice Chancellor

**Copy to :-**

- Pro Chancellor
- VC (JIIT)
- CFO (JIIT)

# Sanction letter

Your project has been approved as per the following details :-

- |                          |   |   |
|--------------------------|---|---|
| (a) Project Title        | : | Bioplastic Production using Water Hyacinth                    |
| (b) Name of the Students | : | Aayush Walia<br>Parth Sharma<br>Divyansh Goel<br>Kushal Gupta |
| (c) Mentor               | : | Dr. Garima Mathur   |
| (d) Department           | : | Biotechnology   |
| (e) Approved Budget      | : | Rs 15,000/- (Rupees Fifteen Thousand Only)                    |



**08**

# Awareness towards societal responsibilities



# Awareness of societal responsibilities



To foster a sense of civic duty and ethical consciousness, the Biotechnology department takes various initiatives.

- Hub for students (with faculty mentor) “Ädwitya” which aims to extend its services to specially-abled persons of the society.
- Participation in Govt. of India’s flagship program “Unnat Bharat Abhiyan”.



# Activities of Ädwitya hub





**09**

# **Dissertation/ Industrial projects**





# Dissertation/Industrial projects



The curriculum is framed so as to provide students with industrial exposure at renowned industries/research institutes

- 6 weeks summer training (outside the institute) is a mandatory part of the B.Tech program that needs to be carried out after their 6<sup>th</sup> semester.
- B.Tech/M.Tech/M.Sc students to carry out their 5-6 months dissertation work.



## INDUSTRIAL PROJECTS CERTIFICATES

Date: 18.05.2023

To whomsoever it may concern

This is to certify that Ms. Nisha Sharma (Enrollment no. 21301001), M.Tech. Biotechnology II- year student of Jaypee Institute of Information Technology, Noida, U.P., has completed her Industrial Project to achieve objectives of her research work on "COMPARATIVE IN-VITRO EVALUATIONS OF QUALITY CONTROL PARAMETERS OF JUBILANT GENERICS LTD ROORKEE'S AZITHROMYCIN TABLETS WITH THREE OTHER BRANDS".

This work, submitted in Partial fulfilment of the requirements for the award of her Degree of M.Tech. Biotechnology is an original work carried out by her under the guidance and supervision of Mr. Kuldeep Sengar at Jubilant Generics Limited, Roorkee during 01-01-2023 to 31-05-2023.

During this training period, we found her sincere and dedicated with learning attitude.

We wish her all success in future.

For: Jubilant Generics Limited

(Authorized Signatory)

To whomsoever it may concern

This is to certify that Ms. Nisha Sharma (Enrollment no. 21301001), M.Tech. Biotechnology II- year student of Jaypee Institute of Information Technology, Noida, U.P., has completed her Industrial Project to achieve objectives of her research work on "COMPARATIVE IN-VITRO EVALUATIONS OF QUALITY CONTROL PARAMETERS OF JUBILANT GENERICS LTD ROORKEE'S AZITHROMYCIN TABLETS WITH THREE OTHER BRANDS".

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A Jubilant Bharatia Company

Our Values



Jubilant Generics Limited  
Village Sikandarpur Shearnwal,  
Roorkee Dehradun Highway, Bhagwanpur,  
Roorkee, Distt. Haridwar-247 661, U.K, India  
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Regd. Office:  
I-A, Sector 16-A,  
Noida-201 301, UR India  
CIN : 124100UP2013PLC060821



Defence Institute of Physiology and Allied Sciences

रक्षा शारीरक्रिया एवं संबंधित विज्ञान संस्थान

(An ISO 9001 : 2008 Certified Institute)

Govt. of India, Ministry of Defence, Defence Research & Development Organization  
भारत सरकार रक्षा मंत्रालय रक्षा अनुसंधान एवं विकास संगठन  
Lucknow Road, Timarpur, Delhi - 110 054  
लखनऊ रोड, तिमरपुर दिल्ली - 110 054

## CERTIFICATE

This is to certify that Ms. Manvi student of Integrated M.Tech (Biotechnology), Jaypee Institute of Information Technology, Noida has completed Dissertation titled "Role of Oxidative Stress and Myokines in Hypobaric Hypoxia Induced Skeletal Muscle Protein Loss in Rats" from 03<sup>rd</sup> January 2023 to 01<sup>st</sup> June 2023 in this establishment.

The work carried out by the candidate is property of DIPAS and should not be published without prior approval of Director, DIPAS.

*Richa*  
01/06/2023  
(Dr. Richa)  
Scientist 'E'  
Pathophysiology and Disruptive  
Technologies

*Niroj K. Sethy*  
(Dr. Niroj K. Sethy)  
Scientist 'E'  
HRD-Coordinator



SPER Market Research Pvt. Ltd.

[Refining Quality Research]

Ref. No.: SPER/2023/06/01

Date: June 01,2023

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Shailesh Gupta**, has successfully completed internship from January 01, 2023, to May 31, 2023, with our organisation as "Market Research Intern".

He handled the Primary and Secondary market research projects. He has a good command over market research concepts. I can say that he is a thorough professional, and values work above anything else.

Apart from his work skills, he is a person with good communication and time management skills.

During the tenure of his internship with us, he was found hardworking and inquisitive, and the organization wishes him all the luck and success for the future endeavours.

Yours Sincerely,

*Aqsa Fatima*

**Aqsa Fatima**  
Senior Talent Acquisition



*Jaya*

**Jaya Pandey**  
Research Head



# Thanks!

