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THE OXFORD COLLEGE OF ENGINEERING

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Describe at least two institutional best

practices

INDEX

SL No.	Particulars	Page No.	
1	Sustainable engineering for societal issues	1-7	
2	Nurturing Start up and Entrepreneurship	8-23	

relling Principal

PRINCIPAL The Oxford College of Engineering Bommanahalli, Hosur Road Bengaluru-560 068





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1. sustainable engineering for societal issues

- 1. **Objective:** \Box 1.
- > To harness solar energy for sustainable power generation.
- > To implement energy-efficient LED lighting.
- > To promote biogas production from kitchen, canteen and organic waste.
- > To promote the use of renewable energy sources.
- ➢ To conserve energy in all forms.
- > To reduce carbon emission in the campus.
- > To expand and maintain green cover within the campus through tree planting.
- > To conserve water resources within the campus.
- > To establish effective solid, liquid and e-waste management systems.
- > To establish a culture of waste reduction and recycling.
- > To minimize the use of paper through digital communication.
- > To promote the use of public transportation for commuting.
- > To promote environmental consciousness among students and staff.
- 2. The Context:
- Energy Dependence: The College was highly dependent on conventional electricity sources, leading to high energy costs and environmental impacts. Alternative and renewable energy sources were necessary.
- Carbon Emissions: With growing concerns over global climate change and rising carbon emissions, there was a need for the college to take measures to reduce its own carbon footprint. This was vital for aligning the institution with broader national and global climate goals.



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Waste Management: The improper disposal of waste, including plastic waste and bio-hazardous waste, posed environmental and health risks. Proper waste management systems needed to be established.

3. **The Practice:-** The Oxford College of Engineering has implemented a multifaceted approach to establish a sustainable engineering for societal issues:

Solar Energy: To address energy consumption and reduce the reliance on conventional electricity sources, the college has implemented various solar energy solutions. These include on-grid, off-grid, and hybrid solar systems that power a range of campus facilities, including hostels and classrooms.

LED Lighting: The campus has implemented energy-efficient LED lighting in classrooms, laboratories, corridors, and garden areas, conserving electricity and providing a well-lit, safe environment for students and staff.

Solid Waste Management: The campus has proper waste management system with strategically placed dustbins, additionally, sanitary napkin vending machines and incinerators in girl's common rooms address bio-hazardous waste disposal.

Liquid Waste Management: The college has implemented a sewage treatment plant (STP) for liquid waste management. This sustainable approach treats wastewater, ensuring environmental compliance.

Roof-top rainwater harvesting: The institution also practices roof-top rainwater harvesting to conserve water resources, promoting sustainability in water management. Biogas Production: A biogas plant with a 1000-liter capacity has been set up on campus, which converts kitchen and canteen waste into green energy.

Tree Plantation: The institution conducts annual tree plantation drives to maintain and expand the campus's green cover, enhancing aesthetics and aiding in carbon sequestration for climate change mitigation.



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Eco-Friendly Transportation: The college offers eco-friendly transportation with buses for students and staff. This reduces individual carbon footprints, promotes sustainable travel, and cuts down on emissions and traffic congestion.

4. Evidence of Success: Use of solar energy has significantly reduced the institution's reliance on conventional electricity. This transition has reduced the electricity bills of the institute and surplus amount of power generated has been forwarded to the grid for further disbursement to the society, thus serving the society. The widespread use of energy-efficient LED lighting has led to a noticeable decrease in electricity consumption across the campus. This measure has translated into cost savings while contributing to a greener environment. The provision of bus facilities has reduced individual carbon footprints and alleviating traffic congestion in the vicinity. The 1000-liter biogas plant effectively converts kitchen and canteen waste into green energy, reducing both waste generation and carbon emissions. The strategically placed dustbins and proper waste management systems have resulted in cleaner classrooms and corridors.

Regular tree plantation drives have expanded the green cover within the campus, resulting in improved air quality and enhanced aesthetics. The campus has around 40+ trees. The success of this effort is evident in the increased greenery on campus. The ban on single-use plastics has effectively curbed plastic pollution on campus. The success is evident in the reduced presence of non-biodegradable plastics in the environment.

5. **Problems Encountered and Resources Required:** It was difficult to change the habits, and so the efforts were needed to educate students towards proper use of dust bins, saving water, putting of lights and fans after use.

Resources Required:



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Funding: Adequate financial resources were essential to fund solar installations, LED lighting, waste management infrastructure, Bio gas plant, maintenance of garden and ongoing sustainability initiatives. These funds were provided by the Management for environment conservation

Technical Expertise: Access to technical experts was crucial for the proper installation and maintenance of solar systems and waste management facilities. **Green, Environment and Energy Audit:** Resources were allocated for conducting annual environmental audits by certified agencies to assess and monitor sustainability efforts.

Sl No.	Project Title related to	Year	Guide	Students Name
	sustainable engineering for			
	societal issues			
1	underpass water logging	2023-24	PROF.	10X20IS062
	system		VIDHYA	Rakshitha HC
				1OX20IS088
				varshini NP
				10X20IS092
				Vijay BR
				10X20IS094
				Vikas B S
2	Traffic Pulse:Live Roadway	2023-24	Prof.Indu	10X20IS053
	control system			Neha R
				10X20IS071
				Shreya Indoria

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				10X20IS072
				Shreya V
				1OX20IS079
				Sowmya R
3	solar wireless Electric vehicle	2023-24	Prof.Nidhi	10X20IS009
	charging			Alfahad basha A
				1OX20IS059
				Prahallad SP
				1OX20IS061
				Raghul P
				1OX20IS068
				SatyaNarayan L
4	Smart bin, Garbage monitoring	2023-24	PROF.BAI	10X20IS034
	and segregation system		RAVI	Hithesh J
				1OX20IS028
				G Jaya Prakash
				10X20IS049
				Mohammed Umaiz N
5	solar based E-Vest for Solider	2023-24	PROF.REK	10X20IS082
			HA	Suhas M D
				1OX20IS090
				Varun Gavoor
				1OX20IS093
				Vijay Simha J
				1OX20IS073
				Shreyas S
6	Preparation of Bioplastic from	2023-24	Dr. Joseph	Samreen





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	various plants		F	1OX20BT022	
	, anous plants			Tazkiya Irshad	
				10X20BT030	
7	IoT Based Solar Tracker:	2023-24	Prof.	Asiya 1OX20CS022	
,	Harvesting Sunlight for	2023 21	Manjula L	DaphnePriya Cutinho	
	Conservation and Appliance		Manjula L	10X20CS032	
				Dawood Ayoob	
	Empowerment			-	
				Sheikh	
				10X20CS033	
				DebanjanPal	
-				10X20CS034	I
8	Assessing the efficacy of	2023-24	Dr. K.	Deepika Y	
	herbal remedies for diabetic		Valarmathy	1OX20BT007	
	wound healing			Gretal N	
				1OX20BT013	
				Srushti	
				1OX20BT028	
9	Remote control plant watering	2023-24	Dr. Manju	Pranav	
	system		Devi	10X20EC042	
				Yogesh	
				1OX20EC078	
				Prajwal	
				10X20EC044	
				Sinchana	
				10X20EC062	
10	Forest based security system	2023-24	Mr.Jayaraj	Gokul	
	to save trees based on		Ν	10X20EC021	



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	Embedded System			Jaswanth	
				1OX20EC026	
				Shreyas Kumar	
				1OX20EC059	
				Tanush	
				1OX20EC068	
11	Smart Farming	2023-24	Mrs.	Naveen	
			Sheeba	10X20EC040	
			Kumari	Gokul Raj	
				10X21EC400	
				Tohid	
				1OX21EC401	
12	Design and Fabrication of	2023-24	Dr.	NIKHIL R	
	Automated Waste Segregator		VIDYADH	1OX20ME009	
			AR PUJAR	NISCHITHA REDDY	
				1OX20ME001	
				SHAMS MEH	DI
				KHAN	
				1OX19ME016	



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2. Nurturing Start up and Entrepreneurship

1. **The Context:** The Oxford college of Engineering is a leading educational institution with a strong focus on academic excellence and overall development of students situated in a rapidly evolving socialist-economic environment. The college offers undergraduate and postgraduate programs in various fields of study, and has a diverse student population from different backgrounds. In this context, the college recognizes the importance of innovation and entrepreneurship in preparing its students for the future. To this end, the college has established an Institution's Innovation Council (IIC), in line with the guidelines issued by the Ministry of Education, Government of India. This report aims to highlight the best practices implemented by the institution's IIC in promoting innovation and entrepreneurship among its stakeholders.

2. Objectives: The primary objectives of the The Oxford college of Engineering are:

• To create a culture of innovation and entrepreneurship among students, faculty, and Staff

• To provide a platform for nurturing innovative ideas and translating them into viable products and services

• To promote collaboration and networking among stakeholders to foster innovation and entrepreneurship

• To create a sustainable innovation ecosystem within the institution and the community

3. The Practice: The IIC at The Oxford college of Engineering has implemented several best practices to achieve its objectives, including:



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Conducting innovation and entrepreneurship workshops: The institution organizes regular workshops on innovation and entrepreneurship to provide students with an understanding of the concept and its importance, and to equip them with the necessary skills to identify and develop innovative ideas.

Organizing hackathons and idea competitions: The IIC organizes hackathons and idea competitions to encourage students to showcase their innovative ideas and receive feedback from mentors and experts in the field.

Providing incubation support: The IIC provides incubation support to students and faculty members who wish to turn their innovative ideas into viable products or services, including mentoring, funding, and networking opportunities.

Building industry-academia partnerships: The IIC has established partnerships with industry players and other stakeholders to promote collaboration and networking, and to facilitate knowledge and technology transfer.

Developing a sustainable innovation ecosystem: The IIC has created an ecosystem that fosters innovation and entrepreneurship, including setting up an innovation lab, providing access to state-of-the-art facilities and resources, and creating an entrepreneurial culture within the institution.

Promoting Innovation and Creativity:

- Encourages faculty and students to engage in innovative research by protecting their ideas and inventions.
- Provides support for developing patentable solutions that address real-world challenges.
- Organizes workshops, seminars, and training programs on intellectual property (IP) to foster a culture of creativity.

Facilitating Patent Filing and Protection

• Assists researchers, faculty, and students in filing patents, copyrights, and trademarks.



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- Guides in preparing and submitting patent applications to national and international authorities.
- Ensures legal protection for inventions, safeguarding them against infringement.

Creating Awareness about Intellectual Property

- Conducts awareness programs on the importance of IP in academia and industry.
- Educates students and faculty about the economic and social impact of protecting intellectual assets.
- Builds understanding of IPR laws, policies, and procedures.

Supporting Technology Transfer and Commercialization

- Facilitates the licensing of patents to industries, enabling revenue generation for institutions.
- Bridges the gap between academia and industry by promoting collaboration for technology transfer.
- Helps institutions monetize research outcomes through intellectual property.

Enhancing Research Quality

- Motivates researchers to conduct high-quality, original research that can lead to IP generation.
- Helps in publishing research without compromising the novelty of potential patents.
- Establishes a benchmark for research excellence through innovative outputs.

Contributing to Institutional Rankings

- A robust IPR portfolio enhances an institution's reputation and rankings in national and global assessments.
- Contributes to metrics like patents filed, technologies licensed, and IP-related publications,.



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Developing Entrepreneurial Ecosystems

- Encourages students and faculty to establish startups based on their patented innovations.
- Collaborates with innovation hubs, incubators, and accelerators for entrepreneurial support.
- Supports initiatives under government schemes like Startup India and Make in India.

Supporting Industry Collaboration

- Facilitates collaboration between academic institutions and industries for joint R&D projects.
- Enables industries to access cutting-edge innovations developed within the institution.
- Provides consultancy on IP-related matters to industries.

Drafting IP Policies for the Institution

- Develops and enforces institutional IP policies to govern ownership, management, and commercialization of IP.
- Ensures fair distribution of benefits between inventors, departments, and institutions.
- Promotes ethical practices in managing intellectual property.•

Encouraging Interdisciplinary Research

• Supports interdisciplinary projects by protecting innovations from diverse fields.

• Provides a platform for researchers from different disciplines to collaborate on IP-focused initiatives.



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4. Evidence of Success: The impact of these best practices on students, faculty, and staff has been significant, as evidenced by:

• On August 8, 2024, TOCE, The Oxford College of Engineering, Bangalore, PG Department of MBA & MCA, together with IIC, had an orientation event for the WEN Ignite X program. Students can turn their dreams into reality through this entrepreneurial journey. Its intended curriculum, WEN Ignite, walks students through every step of the entrepreneurial process. Through experiential learning, it is a hands-on educational journey that fully immerses students in the corporate world. Everything from crafting a strong value proposition to constructing a long-term business plan and achieving financial success is covered in this training program.

• Department of ECE in association with IIC, The Oxford College of Engineering Bengaluru, Organizing One day Field / Exposure visit to Incubation Centre

•Department of Electronics & Communication Engineering in association with IIC,

The Oxford College of Engineering, Bengaluru is organizing Work Shop On "Entrepreneurship Skills and Design thinking for young Engineers"

5. Problems Encountered: The IIC at College faced several challenges in promoting innovation and entrepreneurship, such as:

- Resistance to change among some stakeholders
- Limited funding and resources for implementing the best practices
- Lack of awareness among students about the importance of innovation and entrepreneurship.



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CHILDREN'S EDUCATION SOCIETY(Repl.) THE OXFORD COLLEGE OF ENGINEERING



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Association with IIC

Department of Electronics and Communication Engineering in

Chief Patron

Dr. S.N.V.L Narasimha Raju President The Oxford Educational Institutions

Patron

Dr. H.N Ramesh Principal

The Oxford College of Engineering **IIC President**

Dr. Bindhu Madhavi Professor & HOD Dept of AIML The Oxford College of Engineering One Day Field / Exposure Visit to Incubation centre **CMTI**, Bangalore

Organizing

25/7/2024 1:00 PM ONWARDS

IIC Convener

Dr. Nisha C .Rani Associate Professor Department of Electrical and Electronics Engineering

Convener Dr. Manju Devi Professor & HOD Department of Electronics and Communication Engineering



Mrs.Iffat Fatima Asst. Professor Department of Electronics and

Communication Engineering Faculty Coordinator

Dr. Laya Tojo Associate Professor Department of Electronics and Engineering



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EXPERT TALK ON "ENTREPRENEURSHIP OPPORTUNITIES & HIGHER EDUCATION IN BIOTECHNOLOGY"



The Oxford college of Engineering, Bangalore- Institution Innovation Council in association with the Department of Biotechnology, TOCE organized a Expert Talk on "ENTREPRENEURSHIP OPPORTUITIES & HIGHER EDUCATION IN BIOTECHNOLOGY" on 13th July 2024 from 10.00 A.M in the Department of Biotechnology. The Resource person was Ms. Inchara V, Scientist (Assay Development), Achira Labs Pvt Ltd. Ms. Arpita K, DAAD Doctoral fellow at Institute for stroke and dementia. LMU, Germany OBJECTIVES:



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- To encourage participants to develop an action plan for their entrepreneurial journey in biotechnology.
- To provide a well-rounded understanding of the intersection between entrepreneurship and higher education in biotechnology.
- To highlight the potential entrepreneurship opportunities within the biotechnology sector.

To emphasize the need for an interdisciplinary approach combining biotechnology with other fields like business, engineering, and computer science. The Department of Biotechnology, TOCE organized a Expert Talk on "Entrepreneurship Opportunities & Higher Education in Biotechnology" on 13th July 2024 from 10.00 A.M in the Department of Biotechnology. This session provided an overview of how biotechnology, a field ripe with innovation, offers a wealth of entrepreneurship opportunities spanning pharmaceutical development, medical devices, agricultural biotech, and industrial applications. Entrepreneurs can drive groundbreaking advancements in drug discovery, personalized medicine, and sustainable farming, leveraging cutting-edge technologies to address global challenges. Higher education in biotechnology is crucial, as it equips aspiring entrepreneurs and professionals with the essential knowledge and skills needed to lead and innovate within this dynamic field. Speakers discussed how higher education in biotechnology provides the essential foundation for these innovations, equipping students with critical knowledge in molecular biology, bioinformatics, and bioprocess engineering. By fostering a deep understanding of both the scientific and business aspects, higher education empowers future leaders to innovate and transform the biotechnology landscape, creating solutions that enhance health, agriculture, and the environment.

OUTCOME:



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- The outcomes of entrepreneurship opportunities and higher education in biotechnology are intertwined with innovation. By fostering a culture of creativity and collaboration, higher education institutions enable the next generation of entrepreneurs to develop innovative solutions that address critical global challenges.
- As the biotech industry continues to grow, the synergy between entrepreneurship an education will remain vital for driving progress and innovation in this transformative field.
- Higher education institutions are instrumental in nurturing innovative biotech startups. By offering students a strong foundation in scientific principles and business skills, they prepare future entrepreneurs to create groundbreaking biotechnological solutions that tackle global challenges like health crises and food security.



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Glimpses of Workshop

Recording Link: https://youtu.be/ZX7ER49qjWw Facebook: https://www.facebook.com/photo/?fbid=505420472010001&set=a.177418398143545 &_cft_[______0]=AZV5Ta9LrF44-9w8AJ56uKWdSRJwRwN3M19exfae6xiMoLRCEWBxUZwLdpHF9_AQwYG7sB3 mB57AbHmHMwxfuuLgBwyY1FS3O829PO2VDJDEkUk17okzjg_wRwjvb7zu9ay WafyYejq_TYg0OzPCYsI6ZerZRGPCuXD_9Ui9_5Q&_tn_=EH-R



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EXPERT TALK ON "ENTREPRENEURSHIP OPPORTUNITIES IN IPR"



The Oxford college of Engineering, Bangalore- Institution Innovation Council in association with the Department of Biotechnology, TOCE organized an Expert Talk on "ENTREPRENEURSHIP OPPORTUNITIES IN IPR" on 28th March 2024 from 01.30 P.M in the Department of Biotechnology. The Resource person was Dr. Mary Mangaiyarkarasi M.S is currently working as IP Officer in Bangalore Bioinnovation Centre. She is a qualified Patent Agent. Her job responsibilities include facilitating IP filings, prior art search & FTO search, consultation on patentability of their inventions and Response to FER and Transfer of Technology to startups/ academic and research institutes. She underwent training in Transfer of Technology under "Technology Transfer and Commercialization Training – 2019" by National Biopharma Mission, BIRAC. She recently Children's Education Society ® THE OXFORD COLLEGE OF ENGINEERING Hosur Road, Bommanahalli, Bengaluru-560 068 Website: http://www.theoxford.edu/engineering/ (Approved by AICTE, New Delhi, Accredited by NBA, New Delhi & Affiliated to VTU, Belgaum) coordinated successfully Elevate



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Women Acceleration Programme by Govt of Karnataka. She underwent training in IPR through the Women Scientist 'C' programme under WOSC – DST programme, Govt. of India for one year. She also has a short teaching experience at Prof. Dhanapalan College of Women, Kelambakkam, Tamilnadu. She completed her doctorate at Loyola College, Chennai in a collaborative project with Indira Gandhi Center for Atomic Research, Kalpakkam in the field of Environmetal Microbiology. She holds a Diploma in Patent Law from NALSAR University and is UGC-NET qualified in Environmental Sciences.

OBJECTIVES:

- To raise awareness about the significance of Intellectual Property (IP) in entrepreneurship, including patents, trademarks, copyrights, and trade secrets.
- To empower entrepreneurs with knowledge about different types of IP protection available to them and how to leverage these rights to safeguard their inventions, brands, and creative works.
- Facilitate networking opportunities for entrepreneurs to connect with IP experts, legal• professionals, investors, and fellow entrepreneurs.
- Foster a culture of innovation and entrepreneurship within the community by highlighting the role of IP in incentivizing and rewarding innovation.

The Department of Biotechnology, TOCE organized an Expert Talk on "ENTREPRENEURSHIP OPPORTUNITIES IN IPR" on 28th March 2024 from 01.30 P.M in the Department of Biotechnology. The expert talk illuminated the dynamic intersection between entrepreneurship and Intellectual Property Rights (IPR), showcasing the myriad opportunities that emerge when innovative ideas meet strategic protection. By delving into the landscape of IPR, this session aims to inspire, educate, and equip aspiring entrepreneurs with the tools and insights necessary to navigate the intricate world of intellectual property and leverage it as a catalyst for business success. The speaker provided concrete instances of entrepreneurs who



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effectively employed IP strategies to drive their ventures forward, demonstrating how IP protection serves as a compelling asset for enticing investors, forging partnerships, and facilitating the growth of businesses. The speaker elaborated on fostering collaboration and knowledge exchange among entrepreneurs, IP specialists, legal practitioners, and industry stakeholders. The expert discussion delved into ways to harness the combined strength of the innovation ecosystem to propel favorable advancements and expansion. 46 Students and 4 Faculties participated in the expert talk and made the event successful

OUTCOME:

- The talk raised awareness among entrepreneurs about the importance of protecting their intellectual property and leveraging it to create value for their businesses.
- Attendees may have gained insights into different entrepreneurship strategies for managing and protecting their intellectual property, including patents, trademarks, copyrights, and trade secrets. T
- the expert speaker shared success stories and examples of how entrepreneurs have effectively used intellectual property to drive innovation, secure funding, and gain a competitive advantage, inspiring attendees to explore similar opportunities.
- The talk has provided a platform for entrepreneurs to network with experts in the field of intellectual property, potentially leading to collaborations, partnerships, or mentorship opportunities.
- The outcome of the expert talk on entrepreneurship opportunities in IPR would ideally empower entrepreneurs with the knowledge and resources they need to protect and leverage their intellectual property assets for business growth and success.



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Glimpses of Expert Talk

Instagram:

https://www.instagram.com/p/C5DynQxLlzV/?igsh=MXNxMXY0NG9sbmZmc Q==

YouTube Link: https://youtu.be/Q0w4ipfFhKA

Facebook:

https://www.facebook.com/photo/?fbid=446755277876521&set=a.177418398143545 & cft [0]=AZUjbV249YYDvFKwHfzcOsB4O8R9dJJ9MwKm3JeFhuPUFB8jSA 6mIz8pL7c7mX278z



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