DCS®
Power To Design The Desired

DYSMECH COMPETENCY SERVICES PVT. LTD.

PRODUCT DEVELOPMENT AT INVERTIS UNIVERSITY

SMART STREET LIGHT

ABOUT DYSMECH

Dysmech Competency Services Pvt. Ltd. (DCS) founded in 2000, bags to its name a charismatic aggregation of professionals from diverse verticals, excelling the four Pillars that help flourishing business and taking it to newer horizons. Beneath the advisory ship of Mr. Vijay Kumar, a prominent IIT (Kharagpur) alumnus possessing extensive exposure and experience in the industrial world, the company's management has been honoured and dignified to place the company as one of the leading consultants in India with its nationwide presence in more than 15 cities.

The company pursues, as its aim to use the experience gained by its personnel & skilled experts to service clients maintaining high standards of quality while respecting time schedules.

Company Website: http://dysmech.com/

PRODUCT DEVELOPMENT INVITATION LETTER

Dear Students,

We are thrilled to invite you to participate in an exciting Product Development Program focused on building a Smart Street Lighting System. This program offers a unique opportunity to gain hands-on experience in IoT, automation, sensor integration, energy management, and real-time system control. Through interdisciplinary collaboration, students will work together to develop an innovative lighting solution that is both energy-efficient and intelligent.

This program is open to students from B.Tech, BCA, and MCA disciplines, providing exposure to real-world applications of smart city technologies. By participating, you will enhance your technical expertise, develop problem-solving skills, and gain industry-relevant experience that will prepare you for promising careers in smart technology and energy management.

We invite motivated and innovative students to join this collaborative effort and contribute to the creation of a next-generation smart lighting system.

---

1. INTERDISCIPLINARY DEPARTMENT INVOLVEMENT & TASKS

B.Tech (Engineering Branches):

1. **Embedded Systems & Hardware Development**

    1.1. Integrate ESP32 microcontroller, PIR motion sensors, and Ambient Light Sensors for automated lighting control.

    1.2. Design and develop real-time sensor-based automation circuits.

    1.3. Optimize energy efficiency using smart lighting algorithms.

2. **Energy Management & Optimization**

    2.1. Implement strategies to reduce power consumption using smart scheduling.

    2.2. Develop intelligent lighting solutions that adjust brightness dynamically.

B.Tech / BCA / MCA Students:

1. **IoT & Cloud Integration**

    1.1. Establish real-time data communication between lighting systems and cloud servers.

    1.2. Utilize IoT protocols to monitor and manage smart street lights remotely.

2. **Data Analytics & Machine Learning**

    2.1. Analyze real-time data to optimize energy consumption and detect patterns.

    2.2. Develop predictive models for maintenance and power usage efficiency.

3. **Web & Mobile Application Development**

    3.1. Build a user-friendly dashboard for real-time monitoring and remote control.

    3.2. Implement data visualization tools to enhance system usability.

---

2. PRODUCT DEVELOPMENT OBJECTIVES

1. **Energy Efficiency & Conservation**

    1.1. Design a system that minimizes power usage through automated lighting control.

2. **Real-Time Automation**

    2.1. Develop a smart lighting solution using ESP32 and sensor-based automation.

3. **Scalability & Adaptability**

    3.1. Ensure the system is flexible for applications in homes, streets, parking lots, and highways.

4. **Cost-Effective Solution**

    4.1. Reduce unnecessary energy usage, leading to lower electricity costs.

5. **Enhanced Safety & Security**

    5.1. Improve security by ensuring that areas are illuminated when motion is detected.

6. **Sustainability & Environmental Impact**

    6.1. Contribute to green energy efforts by reducing carbon footprint.

---

3. STUDENT LEARNING OUTCOMES

By participating in this program, students will develop expertise in:

1. **Embedded Systems & IoT Development**

    1.1. Gain hands-on experience with microcontrollers, sensors, and IoT connectivity.

    1.2. Master integration of PIR and ambient light sensors for adaptive lighting control.

2. **Energy Management & Optimization**

    2.1. Develop energy-efficient solutions that optimize lighting schedules.

    2.2. Apply smart automation strategies to minimize power wastage.

3. **Cloud Computing & IoT Protocols**

    3.1. Implement real-time monitoring via cloud platforms.

    3.2. Work with MQTT, HTTP, and other IoT protocols.

4. **Data Science & Machine Learning**

   4.1. Apply predictive analytics to enhance lighting efficiency.

   4.2. Utilize AI-driven insights for smart decision-making.

5. **Software Development & UI/UX**

   5.1. Build an interactive dashboard for remote street light management.

   5.2. Develop user-friendly mobile/web applications for monitoring and control.

---

4. INDUSTRY JOB SCOPE

1. **Smart City & Urban Infrastructure Development**

   1.1. Work on large-scale smart city solutions integrating IoT and automation.

2. **Embedded Systems & IoT Engineering**

   2.1. Opportunities in sensor technology, hardware development, and real-time automation.

3. **Energy Management & Green Technology**

   3.1. Contribute to sustainable and energy-efficient innovations.

4. **Software & App Development**

   4.1. Develop real-time monitoring applications for smart infrastructure.

5. **Data Science & Predictive Analytics**

   5.1. Analyse IoT data to create data-driven smart energy solutions.

---

5. CONCLUSION

The Smart Street Lighting System Program offers a comprehensive and interdisciplinary learning experience, allowing students to work with state-of-the-art IoT, automation, embedded systems, and smart city technologies. By joining this program, you will gain valuable skills, industry exposure, and hands-on expertise, enhancing your employability in cutting-edge industries.

We encourage you to seize this opportunity and be part of an innovative, energy-efficient future!

6. Revenue Potential

The product developed through this project could generate billing of approximately ₹ 5,00,000.00 to ₹ 6,00,000.00 for Invertis University.

DCS®
Power To Design The Desired

DYSMECH COMPETENCY SERVICES PVT. LTD.

SMART STREET LIGHT
PRODUCT DEVELOPMENT ROAD MAP

INVERTIS CSED SMART STREET LIGHT

PRODUCT DEVELOPMENT ROAD MAP

DCS Mentor : Mr. Rahul Chaple

Approximate Product Timeline : 60 Working Days

TASK	LINE OF ACTION	ORGANISER	ASSIGNED DAYS
1	Team Discussion – Industry Standard Product Development & Applications Meeting – CSED Management, Assigned Invertis Staff & DCS Mentors	Talha Khan	1
2	List of Students Interested to Join	Talha Khan	7
3	Team Formation Meeting – Students, Assigned Invertis Staff & DCS Mentors	Avadhesh Sharma	2
4	Web Research & Practical Visit to Campus, Highway & City Street Lighting System - To Study & Understand User Challenges and Smart Requirements	Talha Khan	3
5	Smart Street Light – Market Standards, Requirements, Product Design & Smart Features	Mani Shankar (DCS)	2
6	Smart Street Lights – Research on Required Hardware Materials	Rahul Chaple	4
7	Smart Street Lights - Product Development Planning, Road Map, Task Breakup & Timeline Sheet (Meeting with Team)	Mani Shankar (DCS)	3
8	Permission to Work on Campus/Highway/City Street Light - Feasibility Study, Install IoT Devices on Street Lighting Panels, Provide Wi-Fi Range, Connect Street Lights via IoT Device	Talha Khan	2
9	Compose Hardware & Software Requirements BOM	Mani Shankar (DCS)	1

10	Invertis CSED - BOM Approval - Place Order	Avadhesh Sharma	1
11	Hardware BOM – Delivery to Invertis Campus	Avadhesh Sharma	15
12	**Phase 1 (IoT & Data Science) Task & Timeline Execution**	Avadhesh Sharma/ Rahul Chaple (DCS)	15
13	Get A postpaid Airtel Sim card – Device 4G Connectivity	Avadhesh Sharma	1
14	Device Enclosures & Mechanical Fixtures - 3D Design & Manufacturing	Sandeep (DCS)	10
15	Install IoT Smart Street Light Device inside Campus, Testing, Validation & Documentation Electrician Requirement – Invertis CSED Need to Arrange	Rahul Chaple (DCS)	4
16	Team Discussion on Mobile Application Features Meeting – Students, Assigned Invertis Staff & DCS Mentors	Chaudhary Ravi Singh	1
17	Mobile/Web application Requirements, Task Breakup & Timeline	Mani Shankar (DCS)	2
18	Compose App Development Software & Paid Subscriptions Budgeting	Rushikesh Pande (DCS)	2
19	Invertis CSED - Purchase Approval - Place Order	Chaudhary Ravi Singh	1
20	**Phase 2 (Mobile App) Task & Timeline Execution**	Chaudhary Ravi Singh/ Rushikesh Pande (DCS)	20
21	Final Product Testing	Rahul Chaple (DCS)	4
22	Product Validation	Mani Shankar (DCS)	2

DCS®
Power To Design The Desired

DYSMECH COMPETENCY SERVICES PVT. LTD.

SMART STREET LIGHT – PRODUCT DEVELOPMENT TEAM FORMATION

INVERTIS CSED SMART WASHROOM – PRODUCT DEVELOPMENT TEAM FORMATION

Sr. No	PRODUCT DEVELOPMENT STAGES	STUDENTS		STUDENTS	MENTORS
		BRANCH	CSED PREREQUISITE		
1	IOT APPLICATION DEVELOPMENT	B. Tech (EE, ETC)	IT_1	5	**DCS** MR. RAHUL CHAPLE **INVERTIS** Dr. Chaudhary Ravi Singh, CSE Department
2	DEVICE ENCLOSURE – DESIGN & MANUFACTURING	B. Tech (Mech)	Module 1 & 2	5	
3	DATA SCIENCE MODEL DEVELOPMENT	B. Tech, BCA	IT_5 & IT_6	5	
4	APPLICATION DEVELOPMENT	B. Tech, BCA, MCA	IT_5	5	

1. IOT APPLICATION DEVELOPMENT

Sr. No	STUDENT NAME	BATCH	CONTACT
1			
2			
3			
4			
5			

2. DEVICE ENCLOSURE – DESIGN & MANUFACTURING

Sr. No	STUDENT NAME	BATCH	CONTACT
1			
2			
3			
4			
5			

3. DATA SCIENCE MODEL DEVELOPMENT

Sr. No	STUDENT NAME	BATCH	CONTACT
1			
2			
3			
4			
5			

4. APPLICATION DEVELOPMENT

Sr. No	STUDENT NAME	BATCH	CONTACT
1			
2			
3			
4			
5			