

# **JDNET TECHNOLOGIES**

(ISO 9001:2015 CERTIFIED INSTITUTION)

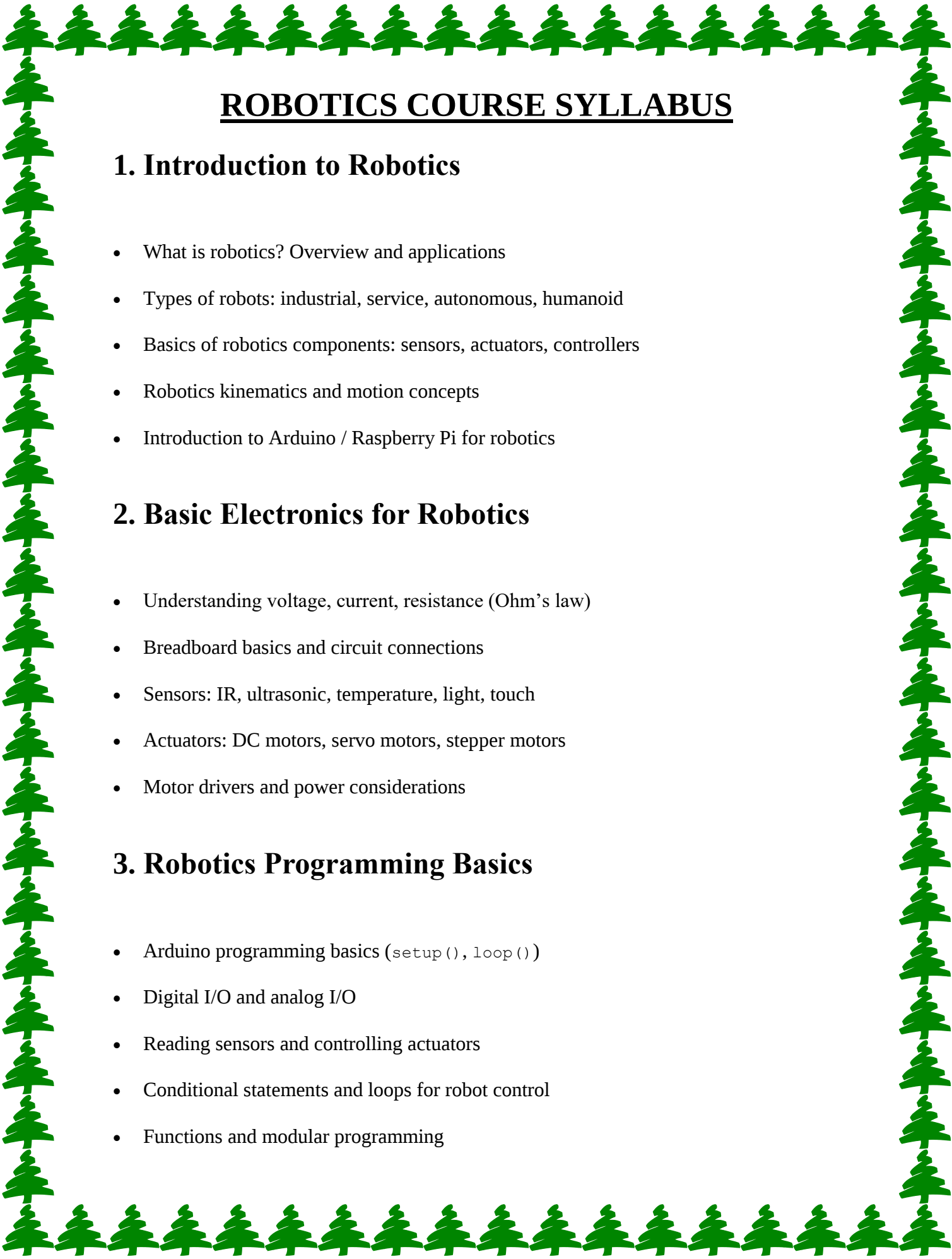
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**ROBOTICS**



## **TRAINING COURSES FOR ALL DEPARTMENTS**



# **ROBOTICS COURSE SYLLABUS**

## **1. Introduction to Robotics**

- What is robotics? Overview and applications
- Types of robots: industrial, service, autonomous, humanoid
- Basics of robotics components: sensors, actuators, controllers
- Robotics kinematics and motion concepts
- Introduction to Arduino / Raspberry Pi for robotics

## **2. Basic Electronics for Robotics**

- Understanding voltage, current, resistance (Ohm's law)
- Breadboard basics and circuit connections
- Sensors: IR, ultrasonic, temperature, light, touch
- Actuators: DC motors, servo motors, stepper motors
- Motor drivers and power considerations

## **3. Robotics Programming Basics**

- Arduino programming basics (`setup()`, `loop()`)
- Digital I/O and analog I/O
- Reading sensors and controlling actuators
- Conditional statements and loops for robot control
- Functions and modular programming



## 4. Motion Control & Navigation

- Robot movement types: differential drive, omni-wheel, four-wheel
- Controlling motor speed and direction using PWM
- Line following robot principles
- Ultrasonic sensor-based obstacle avoidance
- Introduction to PID control (conceptual)

## 5. Robotic Sensors & Integration

- Sensor interfacing and calibration
- Integrating multiple sensors for decision-making
- IR sensors, ultrasonic, and touch sensors in projects
- Data acquisition and processing

## 6. Advanced Robotics Concepts

- Introduction to robotic arms and manipulators
- Servo motor control and gripper mechanism
- Introduction to Raspberry Pi robotics (optional)
- Wireless control: Bluetooth / Wi-Fi module
- Introduction to ROS (Robot Operating System) – overview



## Connect With Us

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