Robotics and Automation (10-assignment)

This is an integrated instructional module designed specifically to operate within a Modular Program environment. It is ideal for use with our Scantek Technology program. The module includes a 10-assignment exploratory curriculum that is split into two parts. Each part includes a pre-test and post test. The module includes hardware, software and curriculum materials sufficient to provide a complete learning experience.

The curriculum incorporates continuous assessment through questions. When used in conjunction with a ClassAct networked management system, this provides instant feedback of student performance. The assessments begin with a comprehensive pre-test. This quiz includes questions for each subsequent assignment, together with questions that will specifically test math and reading ability.

Every assignment starts with a series of questions designed to track inventory. These ensure that any missing items are located before they are needed.

Each assignment is divided into a series of tasks. Hands-on tasks form the core of the student work. Where appropriate, these are accompanied by research tasks based upon software applications. Assessment questions are incorporated into each task.

Typical 10-assignment topic areas include:

- Basic robot controls
- Joints of a robot
- Manual control of a robot arm
- Work spaces and work envelopes
- Computer control of a robot arm
- Commands of a control program
- Sensors and drives
- Storage and replay of a program sequence
- Assembly

Typical 10-assignment activities include:

- Look at robot types, the names of the joints and how a robot is controlled.
- Become the controller for a model robot.
- Carry out a sequence of instructions to guide a robot through a task.
- Look at how robots are controlled in industry.
- Design a control program.
- Listen to a different control program to complete a task without looking.
- Use a computer to give instructions to a model robot.
- Set up the interface between the computer and the robot.
- Control elements of the robot using a mouse and computer keys.
- Sketch work spaces and work envelopes of two different robots.
- Use flow diagrams to simplify complicated control sequences.
- Investigate how computers communicate with automated systems.
- Write and store a sequence of instructions for a robot to follow.
- Replay the sequence to simulate an automated system.
- Add sensors and mechanisms to a robot to make a complete work-cell.
- Look at different types of sensors in common use today.

Typical 10-assignment activities include (continued):

- Use sensors to feed back information to the controller of a work-cell.
- Complete a program to utilize a work-cell to assemble parts.

Each assignment is designed around a list of performance objectives. These lists include academic, technical and occupational objectives. The assignments are written in such a way as to enable a student to attain the performance objectives, with the assessment questions linked to these in order to provide a measure of true competency.

The performance objectives are used by the ClassAct management system to generate a comprehensive portfolio of student competency reports. Default reports supplied with this module include:

- Entry report
- Technical/Occupational Exit report
- Basic Skills report based upon the federal SCAN's report.

The items supplied with this instructional module include:

- 10-assignment On-Screen Student Assignment Guide CD
- 10-assignment Student Assignment Guide
- 10-assignment Student Workbook
- 10-assignment Instructor's Guide
- Computer Aided Instruction software
- RoboTEK II robot
- RoboTEK II parts workcell
- RoboTEK II program

Additional items required:

- Computer

Module Facts

For Technology Program, order as:
ST240/10 Robotics and Automation

	No.	Average time
Assignments	10	45 minutes
Extension Activities	2	45 minutes
	Total	9 hours

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