DOCUMENT RESUME

ED 255 672 CE 041 140

AUTHOR Hull, Daniel M.; Lovett, James E.
TITLE An Assessment of the State of the Art of Curriculum Materials and a Status Assessment of Training Programs for Robotics/Automated Systems Technicians. Task Analysis and Descriptions of Required Job Competencies of Robotics/Automated Systems Technicians.
INSTITUTION Center for Occupational Research and Development, Inc., Waco, Tex.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE May 84
CONTRACT 300-83-0122
NOTE 156p.; For related documents, see CE 041 139-143.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS *Automation; Educational Research; *Electromechanical Technology; Enrollment; *Manufacturing; Occupational Information; Postsecondary Education; *Robotics; *School Statistics; School Surveys; State of the Art Reviews; Teachers; Technical Education; Technological Advancement; Two Year Colleges
IDENTIFIERS *Computer Assisted Manufacturing

ABSTRACT

This report presents the results of research conducted to determine the current state of the art of robotics/automated systems technician (RAST) training offered in the United States. Section I discusses the RAST curriculum project, of which this state-of-the-art review is a part, and offers a RAST job description. Section II describes the information sources for the project survey--public and private institutions providing technician training--and the types of information sought. The presentation of data is addressed in section III. A table provides a state-by-state listing that identifies the number of schools offering RAST training. Section IV presents a summary of the results of the survey which indicates that: 56 institutions currently provide RAST training programs; 114 schools offer robotics courses as electives; currently, 159 instructors teach robotics and 5,472 students are studying to become robotics technicians in the two-year associate degree and certificate programs; 33 texts are currently being used in training robotics technicians; and 27 other competency-based modular texts applicable to portions of RAST training are available. Appendixes, amounting to approximately four-fifths of the report, include raw survey data, a bibliography, and a chart of colleges and universities offering robotics training. (YLB)

CENTER FOR OCCUPATIONAL RESEARCH AND DEVELOPMENT
601 C Lake Air Drive, Waco, Texas 76710
817/772-8756

AN ASSESSMENT OF THE STATE OF THE ART OF CURRICULUM MATERIALS AND A STATUS ASSESSMENT OF TRAINING PROGRAMS FOR ROBOTICS/AUTOMATED SYSTEMS TECHNICIANS

Project No. 051MH30009

Contract No. 300-83-0122

TASK ANALYSIS AND DESCRIPTIONS OF REQUIRED JOB COMPETENCIES OF ROBOTICS/AUTOMATED SYSTEMS TECHNICIANS

Daniel M. Hull James E. Lovett

Center for Occupational Research and Development

Waco, Texas

May 1984

The research reported herein was performed pursuant to a contract with the Office of Vocational and Adult Education, U. S. Department of Education. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Department of Education position or policy.

U. S. DEPARTMENT OF EDUCATION

OFFICE OF VOCATIONAL AND ADULT EDUCATION

ROBOTICS/AUTOMATED SYSTEMS TECHNICIAN TRAINING IN THE USA
A State-of-the-Art Report
ABSTRACT

This report presents the results of research conducted to determine the current state of the art of Robotics/Automated Systems Technician (RAST) training offered in the United States; that is, it identifies institutions, instructors, texts and number of students currently involved in training technicians. The research is based on the presumption that postsecondary public and private institutions, employer-sponsored retraining/upgrading or consultants and vendors can provide adequate preparation of technicians so that they can competently install and maintain robots/automated systems.

For the purposes of this study, "State of the Art" is understood to be a description of current robotics/automated systems technician training in public and private schools including the text material being used, and the quantity, education and experience of instructors.

The Center for Occupational Research and Development and Robotics International of the Society of Manufacturing Engineers conducted a survey to determine the State-of-the-Art of Robotics/Automated Systems Technician Training. The results of this survey, included in Section IV, indicate that 56 postsecondary institutions currently provide robotics technician training programs. Additionally there are 114 schools that offer robotics courses as electives. There are currently 159 instructors (76 with Masters Degrees and 7 with PhDs) teaching robotics and 5472 students studying to become robotics technicians in the two-year associate degree and certificate programs. Thirty-three texts were identified as currently being used in training robotics technicians; however, only one of these is known to be competency based and modular in format. There are also 27 other competency-based, modular texts available which are applicable to portions of Robotics/Automated Systems Technician training.

SECTION I

INTRODUCTION

A. BACKGROUND

Our country's future in the world marketplace of production depends upon the ability of its industries to economically produce high-quality goods. To continue as economical producers, industries will utilize robots and automated systems. This utilization will also require adequately trained technicians to install, operate and maintain these modern devices and assemblies. Effective Robotics/Automated Systems Technician (RAST) training programs include instruction in a variety of fundamental subjects including mechanics, electricity, heat transfer, and fluidics. The programs also include systems courses that are adaptable to incorporate new developments in robotics technologies.

Robots are a key factor in the ability of the United States to maintain a competitive position in the world marketplace. Robots perform many tasks other than the classical--hot, heavy and hazardous jobs. These include assembly (both large and small parts), parts sorting, palletizing, parts stacking (in an orderly manner), mail delivery, quality control, etcetera.

There are, at the present time, approximately 4,000 robots working in factories; by 1990 an estimated 150,000 robots will be installed and working (University of Michigan/Society of Manufacturing Engineers Delphi forecast[1]). Technicians will be required to install, set up, calibrate, operate, service, and maintain these robots and the automated systems where they are used. The technicians must be competent in hydraulic, mechanical, electric, thermal, and pneumatic systems, programmable controllers, sensing systems, safety, vision systems, and controller communications techniques and systems.

Based on a study by Donald Smith[2] for the University of Michigan and the Society of Manufacturing Engineers, there will be a need for 11,000 to 15,000

---

[1] Smith, Donald N. and Wilson, Richard C. Industrial Robots - A Delphi Forecast of Markets and Technology. Society of Manufacturing Engineers, 1982.

[2] Ibid.

robotics technicians by 1990. To provide for this projected need, comprehensive, broad-based robotics technician training programs will have to be established to retrain existing workers and to educate new technicians in a manner that ensures their employability.

The level of training required for technicians who install and maintain robots is considerably beyond that of a high school education. A high school student in a modern vo-tech program would not have sufficient time to adequately study the required high school subjects and also learn the material required to become a competent RAST. Therefore, the curriculum and supporting module outlines to be developed during this project will focus on prebaccalaureate, two-year "High-Tech" robotics/automated system programs. However, articulation into these programs from vocational high schools is encouraged.

B. PROJECT DESCRIPTION/PURPOSE

In August 1983 the United States Department of Education awarded a contract to the Center for Occupational Research and Development (CORD). The project has four major tasks: (1) determine the current state of the art of robotics technician training, (2) analyze tasks performed by robotics technicians; (3) design a model curriculum for training robotics technicians; and (4) develop complete module outlines for new courses in the curriculum.

To assist in accomplishing these tasks, CORD established a Panel of Experts (POE). The panel membership represents robotics manufacturers and users, educators and organized labor (see Appendix A for names). The panel also provides input to and validates, by passing judgment on their value, the tasks required of robotics technicians.

The CORD staff compiled a list of tasks from several sources. The robotics technicians task list was mailed to and reviewed by panel members. Their suggestions have been incorporated. The revised task list has been resubmitted for their validation. Once the tasks are validated as requirements for robotics technicians, they will be used as a guide in determining the training requirements. The POE will continue to review and comment on the curriculum and module outlines as these are being developed.

One part of the RAST curriculum project is to determine the current state of the art (SOA) of RAST training available in the USA. For clarification, the SOA is defined to be an assessment of the current status of robotics and automated systems training programs that exist in public and private institutions throughout the country. This assessment should answer several questions: (1) What training exists and where is it located? (2) What is the extent of training at the different sites? (3) What are the resources (instructors, texts, etc.) available to students desiring robotics training? CORD has assimilated data from Robotics International/Society of Manufacturing Engineers and from state vocational education directors to answer these questions. The raw data are Appendix B.

C. ROBOTICS VS ROBOTICS/AUTOMATED SYSTEMS

The first Panel of Experts meeting resulted in a recommendation to change the project title from "Robotics" to "Robotics/Automated Systems." The rationale for the change is given below. Robots are assemblies of electrical, pneumatic, electronic, and/or hydraulic manipulators and mechanisms. These components are connected in a manner, and controlled by a programmable controller, to perform specific tasks. In modern robots the programmable controller can be reprogrammed periodically, allowing the robot to perform a variety of tasks. Most robots are elements of production systems which creates an automated system. Another type of automated system is an assembly of manipulators and mechanisms, similar to those in robots, which are controlled by a microprocessor to accomplish several tasks rapidly. Since both robots and automated systems are assemblies of similar manipulators and mechanisms and robots work as part of an automated system, it is natural to include automated systems in the title of this project.

D. STANDARDS OF COMPARISON

One of the first steps in developing a curriculum to train technicians is to define what is expected of that person during employment. A Robotics/Automated Systems Technician job description agreed upon by the Panel of Experts is:

Robotics/Automated Systems Technicians are technical specialists with broad-based electromechanical skills who are familiar with electronic, mechanical and hydraulic/pneumatic devices. They are usually specialists in computer-aided design, robotics, computer numerical control, or processing equipment and can set up automatic machines which work together as part of a total automated system. In their area of specialization, they can install, set up, troubleshoot, integrate, program, modify, test, operate and repair systems and components. They are field-service, installation or service technicians. They will work either under the supervision of an engineer, as a member of a team or as a supervisor of other technicians.

In order to attain the skills and knowledge described above, a technician will require a "broad-based" education which is based upon the principles of several interrelated technologies. Therefore, the curriculum being developed as part of this contract will include fundamental courses from many disciplines: mechanics, electricity, hydraulics/pneumatics, heating and cooling, mathematics and computer literacy. At the conclusion of the two-year program, a graduate will be expected to understand the basic principles and their application to real devices. Most, if not all, of these fundamentals are interwoven in the principles of robotics and automated systems.

To become an effective technician, the student must recognize systems that function as a unit. The student laboratories will include the assembly of individual components into functional systems. It is only by starting with, and understanding, components (building blocks) that the system operation can really be understood. The laboratories will be organized so that several systems work together, thereby allowing the student to observe how the robotics/automated systems work together in a typical manufacturing cell.

Appropriate courses will enable the student to become familiar with computers, how they function and how they can be made to work with each other. Most modern industrial processes have become highly automated. Repetitive tasks in machining, assembly, painting and testing are accomplished by automated machines or industrial robots. These processes, machines, and robots are controlled by computers. Technicians, working with automated equipment or data-management systems, must be able to use both the software and hardware of computers and microprocessors. The development, installation,

calibration, troubleshooting, and repair of most computerized equipment require the combination of knowledge and skills found in computer programming and digital electronics.

A solid background in applied physics is fundamental to a technician's training. Applied physics should be taught during the entire first year with at least half of the physics instruction being spent in laboratories observing and measuring physical phenomena on real-world equipment--and not just using sterile physics equipment. One of the curriculums, United Technical Concepts (UTC)*, includes the appropriate sequencing of applied physics which are the broad technical base upon which the curriculum is developed. The various topics, or concepts, in UTC are presented in a unique manner, stressing the unification of basic physical concepts, such as force and resistance across the usually traditional boundaries of mechanics, electricity, heat, and fluidics. Subsequently, device-oriented courses build upon the practical application of the physics principles presented in the UTC labs.

*Information about UTC Physics can be obtained from CORD, 601C Lake Air Drive, Waco, TX 76710.

SECTION II

SOURCES AND DATA COLLECTION

A. SOURCES OF TRAINING

A wide variety of institutions offer robotics training today. The State-of-the-Art study examines all major public and private sources of training including two-year technical schools or junior colleges which issue certificates or associate degrees to students completing their training. There are private schools that provide full two-year robotics training. Programs other than two-year, in both public and private sectors, offer robotics courses as electives supporting other major programs. Many institutions provide continuing education classes and/or seminars addressing the use of robots. These seminars are more for familiarizing students with robots than for training technicians.

Some robot manufacturers provide training for their customers' personnel. Such vendor training may be on very different levels, ranging from training technicians and operators to training engineers in the use and programming of specific robots. The technician training provided is of interest to this project. The curriculum for vendor training, however, is directed at one or, at best, a few, specific model(s) of robot(s) produced by a particular manufacturer. The training does not include the fundamentals needed to make the technician versatile and able to work on a wide variety of robots and systems. In all likelihood, the technicians would not be able to work on and maintain more than one or two models of robots.

Manufacturers and users of robots often provide training for their employees. Like vendor training, user training is specific to the relatively few models in use at the local facility. Again, training would not include fundamentals and technical principles, and thus would have a limited usefulness for the technician.

This study investigates and summarizes technician training in public and private institutions, not manufacturer- or customer-supplied training. Analysis of data shows a breakdown according to the type of program offered and the resources required to support it.

B. INFORMATION SOURCES

As an efficient method of obtaining data, and to avoid redundancy in conducting the survey of schools, CORD has worked cooperatively with outside organizations including Robotics International of the Society of Manufacturing Engineers (RI/SME) and the State Directors of Vocational Education. Through these organizations, public institutions were surveyed to obtain data required to complete the forms used in Appendix B.

The director of vocational education in each State was asked to supply the names of all schools that provide, or are planning to provide, robotics training. Subsequently, these lists were compared to the list of schools responding to the RI/SME survey; discrepancies were resolved with a telephone call. The CORD staff called the robotics contact person at those institutions which had not responded to the RI/SME survey to obtain data required. The complete data is presented in raw form in Appendix B. Neither the development of the survey instrument or the survey itself was part of the project activities.

C. INFORMATION SOUGHT

The following information was determined to be used in examining robotics/automated systems technician education state of the art:

- Name of school and address.
- Contact person and phone number.
- Program type.
- Number and qualification of instructors.
- Number of students enrolled and graduated.
- Texts being used.

Institutions offer training in many formats. The formats of highest interest for this project are two-year certificate, diploma and Associate of Applied Science programs. In many cases, the difference in terminology between AAS (Associate of Applied Sciences), diploma, and certificate may not be indicative of differences in program content or level. The designation of specific terminology (AAS, certificate, etc.) may be a decision of a local school, district, state or some combination of these agencies. Programs of interest in this survey include those in robotics/automated systems, those

that offer robot courses as an optional portion of another program, and curricula with robotics courses available as electives at the student's option. Appendix b differentiates between these types of programs, both those that are independent programs in robotics training, and those that offer optional courses in robotics as a part of another program. Programs that offer a robotics curriculum are expected to provide the most comprehensive training, including an appropriate applied physics course as a base. If robotics is available as an option in another specialty area, the robotics training, probably will not be comprehensive. It is also highly doubtful that such training would be broad-based. In schools where robotics electives are offered, training needed by robotics technicians will be minimal. There is almost a certainty that training would not be broad-based.

A credible program should be staffed by teachers who are experienced in industry and teaching. Industry experience is viewed as very important in order to provide an instructor with a thorough up-to-date understanding of the requirements of industry and what is expected of technicians. It must be expected, however, that some schools will have to make compromises in teacher qualifications because of salary constraints of the institution.

Texts are evaluated for their appropriateness for technican training. Many texts are written for use in four-year baccalaureate programs. Several others are texts which provide general information. Very few texts exist for comprehensive competency-based technician training. Those texts which may be useful for technician training are listed in the 'List of Texts in Use" (Appendix C).

SECTION III

DATA PRESENTATION

Table I (Page 12) is a summary of program and student enrollment/graduate information supplied by institutions that responded to the RI/SME survey and the CORD telephone follow-up. (The raw data for this table is included in Appendix B.) It is a state-by-state listing that identifies the number of schools that offer robotics/automated systems technician training. This tabulation indicates the following:

1. 56 schools offer two-year postsecondary programs in robotics.
   - 568 students have graduated from robotics programs.
   - 5472 students are currently enrolled in robotics training (3988 of these students are in Michigan and Ohio).
2. 114 schools offer robotics training as part of another specialty.
   - 1214 students have graduated after studying robotics as part of another specialty.
   - 4568 students are enrolled in courses which will introduce them to robotics/automated systems.

Appendix B also includes data concerning the history of robotics programs being offered. This information indicates:

- 2 schools began offering robotics programs before 1982.
- 40 schools began offering robotics programs between 1982-1983.
- 14 schools are beginning robotics programs in 1984.
- 17 schools are currently developing programs.

A third item defined in Appendix B is the number, education and experience level of instructors involved in teaching robotics courses. This data shows that there are 159 instructors currently teaching robotics courses. Of these 159 instructors, 7 have PhD degrees and 76 hold Masters degrees.

Thirty-three texts, listed in Appendix C, were identified by schools as being used to train students in robotics. It should be noted that several survey returns did not include the name of texts being used at those institutions. Also included in Appendix C are 1) a list of the 27 competency-

TABLE 1

SUMMARY OF ROBOTICS/AUTOMATED SYSTEM TRAINING BY STATE

STATE	ROBOTICS/AUTOMATED SYSTEMS			ROBOTICS/AUTOMATED SYSTEMS AS PART OF ANOTHER SPECIALTY		
	TWO-YEAR POSTSECONDARY PROGRAMS	GRADUATES	CURRENT ENROLLMENT	TWO-YEAR POSTSECONDARY PROGRAMS	GRADUATES	CURRENT ENROLLMENT
Alabama	0	0	0	7	30	224
Arizona	0	0	0	1	0	0
Arkansas	1	0	4	3	12	216
California	4	0	69	3	0	129
Colorado	0	0	30	0	0	0
Delaware	0	0	10	0	0	0
Washington, DC	0	0	0	1	0	25
Florida	1	0	52	6	45	259
Georgia	0	0	0	2	0	58
Idaho	0	0	0	1	0	17
Illinois	5	0	212	7	112	195
Indiana	3	0	223	7	60	475
Iowa	2	0	65	3	9	62
Kansas	0	0	0	3	15	31
Kentucky	0	0	0	1	0	29
Maryland	2	0	49	1	0	0
Massachusetts	0	0	0	3	0	85
Michigan	10	500	2745	5	200	560
Minnesota	2	0	64	3	100	353
Mississippi	0	0	24	0	0	0
Missouri	2	0	75	1	0	120
Nebraska	0	0	0	2	25	62
New Jersey	0	0	0	4	0	152
New Mexico	0	0	0	1	160	120
New York	2	0	65	7	160	134
North Carolina	0	0	0	7	91	170
North Dakota	1	0	14	0	0	0
Ohio	8	0	1243	6	73	254
Oklahoma	1	0	54	3	80	80
Oregon	1	0	18	1	0	10
Pennsylvania	2	0	90	1	0	18
South Carolina	1	0	30	1	0	45
South Dakota	0	0	0	1	0	132
Tennessee	2	0	151	4	0	94
Texas	1	0	40	5	0	84
Utah	0	0	0	1	0	30
Virginia	0	0	0	1	2	22
Washington	2	8	18	2	0	44
Wisconsin	3	60	127	8	40	219
Wyoming	0	0	0	1	0	10
Total	56	568	5472	114	1214	4518

based modular texts available from the Center for Occupational Research and Development and 2) a list of book titles, copied from Books in Print, which were not identified as being used in classrooms.

In addition to the two-year postsecondary programs already described, 80 colleges and universities identifed their involvement in robotics training. These schools are identified, along with the fields of study in which they offer robotics courses, in Appendix D.

SECTION IV

SUMMARY/CONCLUSIONS

A. SUMMARY OF DATA

The survey requested 3200 institutions to supply data describing their programs. Of these, 376 replies were received in time to be evaluated for this report. The final analysis, Table I, indicates that there are 56 two-year programs, with a total enrollment of 5472 students, currently providing robotics training. These institutions--that is, those most likely to provide comprehensive broad-based technician training--represent 11% of institutions surveyed.

The curricula offered by these institutions have various names including Robotics Technician, Robotics/Automated Manufacturing, and Computer-Integrated Manufacturing. The curricula for these programs have been developed with one goal--training a person to be a technician who can install, operate, calibrate, troubleshoot and repair robots and automated production systems. Other data presented indicates that 114 schools offer programs with robotics/automated systems courses as options or electives in other specialty areas. As identified in Appendix B, schools with elective robotics courses offer them as part of Electronics, Computers, Industrial Technlogy, Electromechanical Technology, and Industrial Electronics (this list is not all-inclusive) curricula. Since those curricula have been developed to train students in areas other than robotics, it is logical to assume that the students will not receive the depth or breadth of exposure to robotics and automated systems required of Robotics/Automated Systems Technicians.

Table II is included for information only. It shows the growth of institutions offering robotics training. The institutions responding to the survey indicated 159 instructors involved in classes where robots or robotics systems are studied. Of these, only 7 have PhD degrees while another 76 hold Masters degrees. The remainder, as indicated in Appendix B, have BS or AAS degrees, or experience with robots as their credentials. The number of instructors--159--does not include instructors of support courses or courses

offered by other departments (other than departments with robotics courses) as these persons support many areas of specialization--not just robotics.

The institutions contacted during the telephone follow-up indicated that quite often trade-offs of salary and benefits necessitate hiring instructors with less education/experience than is really desirable. This means that the schools--to a large extent--do not have fixed minimum requirements for these instructors.

TABLE II. SCHOOLS WITH TWO-YEAR POSTSECONDARY ROBOTICS PROGRAMS

Year Started	Number
Pre-1982	2
1982	6
1983	34
1984	14
Currently being developed	17

B. CONCLUSIONS--THE STATE OF THE ART

The survey was sent to 3200 institutions; replies were received from 376 of these indicating 56 institutions have RAST programs in place and 17 more are developing new programs. There may not be a need for many more new programs. This fact is even more evident with the number of students currently enrolled--5472--in RAST programs. Allowing for attrition and predictable delays in graduation beyond the scheduled two years, it is estimated that approximately 2200 students will be graduating each year. The current projected enrollment levels at schools with existing and planned programs may be sufficient to meet the projected need of 11,000 to 15,000 technicians in this field by 1990.

Most institutions that responded to the RI/SME survey did not identify text materials being used. Appendix C, "List of Texts in Use," is a listing of those texts that were identified. The only texts that have been identified as competency based are those from Heath/Zenith.

Based upon the texts in use and informal information supplied during the telephone follow-up to the survey, very few programs in place today are truly competency based, nor are many broad based (training RASTs to be versatile and able to install, set up, operate, maintain, program, troubleshoot,

repair, test and calibrate any robot or automated system that their future employer may elect to purchase). The need, both immediate and future, will be for institutions to install broad-based programs or to increase the breadth of existing programs to include training on electrical, pneumatic and hydraulic robots and automated systems. The curriculum for RASTs must be based upon the mastery of technical principles, enabling students to learn the interrelationship of mechanical, electrical, thermal and fluidic fundamentals, and to learn new technologies as they emerge.

The model curriculum to be developed as part of this project will be available as a guide to help institutions establish new programs or improve existing programs. New course outlines will provide guidance as new modules are written in support of these new improved programs.

APPENDIX A

TASK ANALYSIS AND DESCRIPTIONS OF REQUIRED JOB COMPETENCIES OF ROBOTICS/AUTOMATED SYSTEMS TECHNICIANS

PANEL OF EXPERTS

Mr. Daniel M. Hull, President and
POE Chairman
Mr. James E. Lovett, Research Associate
Dr. Leno S. Pedrotti, Programs Manager
Center for Occupational Research and
Development
601 C Lake Air Drive
Waco, TX 76710
817/772-8756

Mr. Barry L. Baker
The DeVilbiss Company
P. O. Box 913
Toledo, OH 43692
419/470-2103

Mr. Roger Bertoia (Advisory Member)
Dean of Occupational Education
Washtenaw Community College
P. O. Box D-1
Ann Arbor, MI 48106
313/973-3300

Dr. Walter Edling, P.E.
Dean of Instruction
Lorain County Community College
1005 North Abbe Road
Elyria, OH 44035
216/365-4191

Mr. Ken Edwards, Education Department
International Brotherhood of
Electrical Workers
1125 15th Street, NW
Washington, DC 20005
202/728-6140

Dr. Clay G. Johnson
Vice President for Instruction
Texas State Technical Institute
Waco, TX 76705
817/799-3611, ext 381

Mr. Dean LaCoe, Manager of Training
Automatix, Inc.
1000 Tech Park Drive
Billerica, MA 01821
617/667-7900

Mr. Jack Lane, Professor
Assistant Department Head
Mechanical Engineering Department
GMI Engineering and Management
Institute
1700 West Third Avenue
Flint, MI 48502-2276
313/762-7877

Mr. Cecil Lennox (Advisory Member)
Albuquerque Technical-Vocational
Institute
525 Buena Vista, SE
Albuquerque, NM 87106
505/848-1400

Mr. Bill Matheny, Manager
Training and Development
Texas Instruments, Inc.
P. O. Box 6015
Dallas, TX 75222
214/995-6295

Mr. Jeffrey S. Noss
Operations Manager, Robotics Division
Nordson Corporation
555 Jackson Street
Amhurst, OH 44001
216/988-9411

Mr. Lee Ording, Manufacturing Technology
Applications Associate
Manufacturing Staff, Robotics Center
Ford Motor Company
15100 Mercantile Drive
Dearborn, MI 48120
313/594-2280

Mr. Jack Patrick, Director
Mr. Ray Powell (Advisory Member)
Augusta Area Technical School
3116 Deans Bridge Road
Augusta, GA 30906
404/798-4343

Mr. James A. Rehg, Director
Center for Robotics
Piedmont Technical College
Drawer 1467
Greenwood, SC 29648
803/223-8357

Mr. Pat J. Rosato, Director
Technical Training and Publications
Unimation, Inc.
Shelter Rock Lane
Danbury, CT 06810
203/744-1800

Mr. Fred Sitkins
Professor of Mechanical Engineering
Kohrman Hall
Western Michigan University
Kalamazoo, MI 49008
616/383-4992

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

ALABAMA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Hobson State Tech Coll PO Box 489 Thomasville 36784 Wm A Scott, Jr 205/636-9278	Industrial Electronics	X					X	2	BS	10+	F	30	4	84	27		X	
Jefferson St Jr Coll Pinson Valley Pkwy 2601 Carson Rd Birmingham 35215-3098 Howard King		X																Being developed
Snead St Jr Coll PO Drawer D, Boaz 35957 Ray Hartline 205/593-5120	Robotics				16 wk	X		1	AS	10+	F	20	4	84	20		X	One course
John M Patterson St Tech Coll, Troy Hwy Montgomery 36109 Harold L Coomes 205/288-1080	Electronics			X			X	2	MS	10+	F	5	25	84	8		X	
George Corley Wallace St Comm Coll PO Drawer 1046 Selma 36701 Jim Myers 205/875-2634	Electronics Technology	X					X	1		0-5	F	5	to 25	84	10		X	
Bessemer St Tech Coll PO Box 308 Bessemer 35021 Rich Raymond 205/428-6391	Industrial Electronics	X					X	1	AS	5-10	F	10	2	83			X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

ALABAMA (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED					PROGRAM			INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
J F Drake St Tech Coll 3421 Meridian North Huntsville L B Kitchen 205/539-8161	Electronics	X					X	4	BS	10+	F	5	10	83	3		X	
Wallace St Comm Coll PO Box 250 Hanceville 35077 Mr. Rayburn Williams 205/352-6403	Industrial Electronics	X					X	2	BS MS	10+	F	1	5	83	176		X	30 graduates

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

ARIZONA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Central Arizona Coll Coolidge 85228 John Palmer 602/723-4141	None																X	Being developed
Maricopa Tech Comm Coll 108 N 40th Phoenix 85034 M Sperstad 602/275-8500	Electronics	X					X	1	BS	10+		4	0	83	0		X	
Scottsdale Comm Coll 9000 E Chaparral Rd Scottsdale 85253 David Weaver 602/941-0999	Electronics/ Microproces-sor	X				X											X	Being developed

B-3

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

ARKANSAS SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
So Arkansas Univ, Tech Branch PO Box 3048 Camden 71701 Howard King 501/574-4539	Robotics & Manufacturing Automation			X*		X		3	MS	10+	F	4	3	83	4		X	*3-year certificate
Westark Comm Coll PO Box 3649 Fort Smith 72913 Larry Fox 501/785-4241, ext 481	Industrial Control & Robotics	X					X	2	BS MS	10+	F	3	3	82	125 *		X	*Electronics Program 12 graduates
Northwest VoTech School PO Drawer A Springdale 72342 Harold Harris 501/751-8824	Industrial Electronics	X					X	2	BS	5-10	F	4	4	83	20		X	
Twin Lakes VoTech School PO Box 1496 Harrison 72601 Joe Johnson 501/741-6175	Electro-mechanical Technology		X				X	4	AS BS	10+		4	4+	82	71		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

CALIFORNIA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Cerritos Coll 11110 E Alondra Blvd Norwalk 90650 Anthony Austin 213/860-2451	Automated Manufacturing	X		X		X		3	MS	10+		3	3	84	21		X	
San Bernardino Valley Coll, 701 S Mt Vernon San Bernardino 92410 Raymond Cook 714/888-6511	Robots			X		X		3	BS MS	10+		4	3				X	
Ohlone Coll 43000 Mission Blvd Fremont 94539 Curt Huska	Electrical Engineering	X					X	2	BS	0-5	F	3	3	84	24		X	
LA Valley Coll 5800 Fulton Av Van Nuys 91401 William Lavoie 213/980-0431	Engineering	X					X										X	Being developed
Long Beach City Coll 4901 E Carson Long Beach 90808 Dr C P Johnson 213/420-4301	Robotics Technology	X				X		3	MS PhD		F	6	3	83	28		X	
Glendale Comm Coll 1500 N Verdugo Rd Glendale 91208 Donald Ney 818/240-1000	Electronics/ Computer Tech/ Robotics	X		X		X		1	MS	5-10	F	3	3	83	20		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

CALIFORNIA (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Palomar College 1605 W Mission Rd, Unit I San Marros 92069 Dr Joan Stepsis 619/744-8110	Automated Process Control Maintenance Tech			X			X	1	AS	0-5	F	13½	13½	84	25		X	
Laney Coll 900 Faldon St Oakland 94607 Marcos Contreras 415/834-5574	Applied Technology	X					X	3	AS BS MS	10+	F	3	3	83	80		X	
Los Angeles Harbor Coll 1111 Figuerda Pl Wilmington 90744 Prof J Harter 213/518-1000	Electromechanical Tech, Robotics Option																X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

COLORADO SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DEGREE OFFERED: DIPLOMA	DEGREE OFFERED: CERTIFICATE	DEGREE OFFERED: SHORT COURSE	PROGRAM: INDEPENDENT	PROGRAM: PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	INSTRUCTORS: EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	INSTRUCTORS: FULL OR PART TIME	CONTACT HOURS: CLASSES	CONTACT HOURS: LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	INSTITUTIONAL DATA: CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	INSTITUTIONAL DATA: PUBLIC INST.	REMARKS
Comm Coll of Denver Red Rocks Science & Technology 12600 W 6th Ave Golden 80401 P E Perkins L E Deaver 303/988-6160	Flexible Automation-Robotics	X				X		3			P	2	2	82	30		X	
Morgan Comm Coll 17800 Rd 20 Fort Morgan 80701 Robin Hotchkiss 303/867-3081	Industrial Electronics						X										X	Being developed
Front Range Comm Coll 3645 W 112th Ave Westminster 80030 Ralph Duncan 303/466-8811		X															X	Being developed

B-7

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

CONNECTICUT SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Waterbury State Tech 1460 W Main Waterbury 06708 Dr Seretny 203/575-8069	Robotics	X															X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

DELAWARE SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Delaware Tech & Comm Coll 400 Stanton-Christiana Rd, Newark 19701 Gary Haas 302/454-3965	Automation/ Robotics	X				X		1	BS	0-5	F	4	3	83	10		X	
Delaware Tech & Comm Coll 1832 N DuPont Hwy Dover 19901 Sam Guccione 302/736-5441	Electrome-chanical Tech	X					X	2	MS	10+				84			X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

WASHINGTON, DC SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Univ of DC Electrical & Mechanical Engineering Tech Bldg 42-109 4200 Connecticut AVE NW Washington, DC 20008 Dr Edward Walker 202/282-7425	Electrome-mechanical Systems Engineering Technology	X					X	1	PhD	0-5		3	3	83	25		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

FLORIDA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
National Education Cntr 111 NE 44th St Ft Lauderdale 33334 Carl Rader 305/772-0280	Electronics Technology			X			X	4	BS	0-5		4	4	84	200	X		
Pensacola Jr Coll 1800 College Blvd Pensacola 32104 Van Cotsonis 904/476-5410		X					X	3		10+		5	2	83	0		X	35 graduates
Palm Beach Jr Coll 4200 Congress Lake Worth 33461 Phil W Millard 305/439-8123	Electrome-chanical Technology	X															X	Being developed
Edison College College Pkwy Ft Myers 33901 Raymond Crimmel	Advanced Industrial Systems	X					X		AS	0-5		3	3	82	18	36	X	
Polk Comm Coll 999 Ave H NE Winterhaven 33880 Prof H Pearsall 813/294-7771	Electronics Tech	X					X	2-3	MS	5-10		4+	4	84	5		X	
So Florida Comm Coll 600 W College Dr Avon Park 33825 Larry Hooper 813/453-4501	Digital Electronics			X			X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

FLORIDA (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	CONTACT HOURS: YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Systems Tech Inst 6442 Edgewater Dr Orlando 32810 James Mason 305/299-6536			X				X	1	AS	10+		30	15	83	18	X		10 graduates
Brevard Comm Coll 1519 Clear Lake Rd Cocoa 32922 Warren Theirs 305/632-1111	Electronics Tech/Electro-mechanical Option	X					X	1	BS	10+		6	6	80	18		X	
Broward Comm Coll Engineering Tech 3501 SW Davie Rd Ft Lauderdale 33314 Dr Samuel Oppenheimer 305/475-6683	Robotics/ Process Control			X		X		1	BS	10+		2	1	83	52		X	Robotics courses follow AAS program.
Miami-Dade Comm Coll North Campus 11380 NW 27th Ave Miami 33167 John Pistorino 305/596-1225 Harry Forster 305/685-4243	Electronics Technology			X			X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

GEORGIA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Southern Tech Inst Clay Street Marietta 30060 C N Gebhard 404/424-7428	Introductory Robotics				X		X	2	MS	10+		3	2	83	15		X	
Clayton Jr Coll Box 285 Morrow 30260 David Schlobohm Ralph Clark 404/961-3571 404/961-3415	Instrumentation Tech Electromechanical Tech	X					X	2	BS MS	10+		4	3	83	50		X	
DeKalb Area Tech 495 N Indian Creek Dr Clarkston 30021 Glenn Pfautz 404/299-4309	Electromechanical Tech	X					X	4	BS MS	5-10+		3	3	83	8		X	

B-13

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

IDAHO SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Boise State Univ 1910 University Dr Boise 83725 Robert Allen 208/385-1732	Industrial Mechanics			X			X	1	BS	5-10		6	-	83	17		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

ILLINOIS SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS		CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
College of DuPage 22nd St & Lambert Rd Glen Ellyn 60137 Dr James McCord 312/858-2800	Electronics Engineering Tech/Robotics Option	X					X	36	BS	5	FP	4+	4+	83	70		X	
Moraine Valley Comm Coll 1601 W 115th St Worth 60482 Andrew Belford 312/371-2210	Robotics Skills Tech Training			X			X	3	BS	5-10		35	18	82	20		X	22 graduates
Triton Coll 2000 Fifth Ave River Grove 60171 Dean Vernon Magnesen Mr. Neal Meredith 312/456-0300	Manufacturing Engineering Tech/Robotics Option	X		X			X	1	PhD	10+		4	2	82	55		X	90 graduates
Olive-Harvey Coll 10001 S Woodlawn Ave Chicago 60628 William Thauholt 312/568-3700	Computer Electronics Technology	X					X										X	Being developed
Richard J Daley College 7500 S Pulaski Chicago 60655 Mr Gentile 217/735-3000					X												X	Being developed

B-15

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

ILLINOIS (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Illinois Central Coll Rt 24 E Peoria 61635 Richard Polanin 309/694-5510	Robot Tech Robot/NC Serv	X				X		4	MS PhD	5-10+				83	180		X	
Illinois Valley Comm Coll RR 1, Oglesby 61348 Don Haas 815/224-2720	Robotics Application	X				X		8	MS	10+	F&P	4	4	83	18		X	
Joliet Jr Coll 1216 Houbolt Ave Joliet 60436 Peter Kiefert 815/729-9020	Electrical/ Electronic Automated Systems Technology	X				X		3	BS MS	5-10		2	3	83	14		X	
Coll of Lake County 19351 W Washington St Gray's Lake 60030 Tony Gundrun 312/223-6601	Electrome-chanical Technology	X					X	1	MS	10+		4	2	83	50		X	
Kankakee Comm Coll Box 888 Kankakee 60901 Leslie Weedon 815/933-0312																	X	Being developed
Richland Comm Coll 2425 Federal Dr Decatur 62525 Ben Taylor, Jr.	None	X															X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

ILLINOIS (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DEGREE OFFERED: DIPLOMA	DEGREE OFFERED: CERTIFICATE	DEGREE OFFERED: SHORT COURSE	DEGREE OFFERED: INDEPENDENT	DEGREE OFFERED: PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	PROGRAM: EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	INSTRUCTORS: FULL OR PART TIME	CONTACT HOURS: CLASSES	CONTACT HOURS: LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	INSTITUTIONAL DATA: CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	INSTITUTIONAL DATA: PUBLIC INST.	REMARKS
Blackhawk Coll 6600 34th Ave Moline 61265 J R Lambert 309/796-1311, ext 342	Flexible Automation/ Robotics	X				X		2-3	AS BS	0-10		8	4+	84			X	
Wabash Valley Coll 2200 College Dr Mt Carmel 62863 Bob Effland 618/262-8641	Electronic Technology	X					X	2	BS MS	10+		4	2	84	0		X	Start this fall
Waubonsee Comm Coll IL Rte 47 at Harter Rd Sugar Grove 60554 Norman Paul 312/466-4811	Robotics Technology	X				X		2	BS	5-10	P	4	4	84			X	
Bellville Area Coll 2500 Carlyle Rd Bellville 62221 Robert Arndt 816/235-2700	Electronics Tech	X					X	1	MS	10+		4	2	84			X	
Sauk Valley Coll RR 5, Dixon 61021 Jerry Fandra 815/288-5511					X		X	1	BS	10+		3	2	83	10		X	

B-17

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

INDIANA

SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Indiana VoTech Coll 1534 W Sample St South Bend 46619 D W Howard 219/289-7001	Industrial Electronics	X															X	Being developed
Indiana VoTech Coll 8204 Hwy 311 Sellersburg 47172 J W Thomas 812/246-3301	Industrial Maintenance	X				X		4	AS MS	10+	F P	4	4	83	119		X	
Vincennes Univ Robotics Div Technology Bldg (TB-10) 1002 N 2nd Vincennes 47591 Mr Bill Spence, Dean 812/885-4336	Robotics Technology	X				X		3	MS	10+		5	20	83	72		X	
Ball St Univ PAZOZ 2000 University Ave Muncie 47306 Dr LeTang 317/285-5656	Computer-Integrated Manufacturing	X				X		2	PhD	0-5		4	4+	83	20		X	
Indiana VoTech Coll 3800 N Anthony blvd FtWayne 46805 David Brown 219/482-9171	Digital/ Computer Electronics	X					X	4	BS MS	0-5		4	4	83	65		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

INDIANA (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED					PROGRAM			INSTRUCTORS		CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Indiana VoTech Coll 4475 Central Ave Columbus 47202 Gene Adair 812/372-9925	Digital/ Computer Electronics	X					X	2 3	AS	0- 10+	F P	4	2	84	200		X	
Indiana VoTech Coll 7377 S Dixie Bee Rd Terre Haute 47802 Don Arney 812/299-1121	Industrial Electronics	X					X	1	BS	0-5		4	4	83	15		X	
Indiana VoTech Coll Box 3100 Muncie 47302 Mr Dewey Rice 317/289-2291	Industry Tech	X					X	1	BS	10+		5	2	83	60		X	
Tri-State Univ Angola 46703 Ed Nagle 219/665-3141	Technology	X					X	1	MS			3	2	82	25	X		10 graduates
Indianapolis VoTech 1315 E Washington Indianapolis 46202				X			X	2						83	10		X	
Indiana VoTech Coll 3501 1st Ave Evansville 47710 Curtis Palmer 812/426-2865	Industrial Maintenance	X					X	1	BS	10+		4	1	82	100		X	50 graduates

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

IOWA

SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM			INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Marshalltown Comm Coll 3700 S Center Marshalltown 50158 Mr Jeff Dodge 515/752-7106	Electronics Technology	X					X	3	AS BS MS	0-5 5-10			5	3	83	41		X	9 graduates
S E Comm Coll PO Box F West Burlington 52655 J W Smith 319/752-2731	Mechanical Technology	X					X	1	MS	10+			1	2	83	6		X	
Indian Hills Comm Coll Grandview & Elm Ottumwa 52501 Curt Bloomquist 515/687-5201	Robotics Technology	X				X		5	BS	5-10	F		12	14	83	35		X	
N W Iowa Tech Coll Hwy 18 W Sheldon 51201 Dennis Davis 712/324-2587	Elect/Mech Tech	X					X	2	AS BS	0- 10+			5	1	83	15		X	
Des Moines Area Comm Coll 2006 S Ankeny Blvd Ankeny 50021 Thomas Dunsmore 515/964-6277	Robotics & Process Control	X				X		3	AS BS MS	10+			3	4	84	30		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

KANSAS SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Hutchison Comm Coll 1300 N Plum Hutchison 67501 Bruce Balman 316/665-3549		X					X	4	MS	10+		3	4+	83	6		X	
Kansas City, Kansas, Comm Coll 7250 State Ave Kansas City 66112 Bill Chennaut 913/334-1100	Data Proc/ Electronics	X					X	2	MS	0-5		2		83	0		X	15 graduates
Johnson County Comm Coll 12345 College at Quivira Overland Park 66210 Mickey McWilliams 913/888-8500	Manufacturing Tech	X					X	1	MS	10+		4	3	83	25		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

KENTUCKY SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALITY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	CONTACT HOURS: YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Maysville Comm Coll Rt 2, Maysville 41056 J McMillian 606/759-7141	Indus/Elec Tech	X					X	1	MS	10+		3	3	84	29		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

LOUISIANA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Tulane Univ 6283 St Charles New Orleans 70118 Michael Lynch 504/865-5775	Programmable Automation Lab				X		X	2	MS PhD	5-10		3	1	83	20	X		
Louisiana St Univ at Eunice, Box 1129 Eunice 70535 Dr Paul Pai 318/457-7311	Drafting Technology	X					X											Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

MARYLAND SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
RETS Electronics Schools 511 Russell St Baltimore 21230 Mr Earl M Tickler 301/327-6863	Automation Robotic Technology			X		X		1 3		2yr	F P	5	6	84	24	X		
Anne Arundel Comm Coll 101 College Pkwy Arnod 21012 Kenneth Stibolt 301/269-7433	Mechanical Engineering Tech	X			X		X	1	MS	5-10		0	3wk	84	-		X	
Prince George's Comm Coll 301 Largo Rd Largo 20772 Wm Lauffer 301/322-0774	Elec Tech	X					X										X	Being developed
Allegany Comm Coll Willowbrook Rd Cumberland 21502 Dr Mark Wojcicki 301/724-7700	Automated/ Robotic Systems	X				X		4	AS BS MS PhD	5-10+		6	3	84	25		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

MASSACHUSETTS SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Tri-County VoTech 147 Pond St Franklin Ron Seagrave 528-5400	Computer Electronics			X			X	2	MS	10+		4	4	83	38		X	
Bristol Comm Coll 777 Elsbree Fall River 02720 Normand Lavigne 617/678-2811	Engineering Tech	X					X	1	BS	10+		3	1	83	31		X	
Massasoit Comm Coll Brockton 02402 Prof Paul Hardy 617/588-9100	Elect Engr Tech	X					X	2	MS	10+	F P	2	2	84	16		X	
North Shore Comm Coll 3 Essex St Beverly 01915 Ben Merry 617/927-4850	Electrome-chanical Tech Mfg Engr Tech						X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

MICHIGAN

SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES / LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Wayne County Comm Coll 1001 W Fort St Detroit 48226 John Spurlin 313/496-2691	Electrome-chanical Tech	X					X									X	Being developed
Mid Michigan Coll 1375 S Claire Ave Harrison 48625 Tom Groner 517/386-7792	Industrial Technology	X					X	1	MS	5-10		3 / 1	84			X	
West Shore Comm Coll 3000 N Stiles Rd Scottsville 49454 David Wright 616/845-6211	Intro to Robotics					X										X	Being developed
Henry Ford Comm Coll Career & Occup Studies 5101 Evergreen Rd Dearborn 48128 Mr John Nagohosian 313/271-2750	Electrical/ Electronics Technology Robotics/ Automation Option	X					X	8	MS	5-10		50% / 50%	82	500		X	200 graduates (estimated)
Macomb Comm Coll Mechanical Technology 14500 Twelve Mile Rd Warren 48093 Prof Lawrence Ford 313/445-7411	Robotics & Flexible Automation	X				X		4	MS	10+	F	3 / 2	81	1K		X	250 graduates

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

MICHIGAN (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DEGREE OFFERED: DIPLOMA	DEGREE OFFERED: CERTIFICATE	DEGREE OFFERED: SHORT COURSE	PROGRAM: INDEPENDENT	PROGRAM: PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	INSTRUCTORS: EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	INSTRUCTORS: FULL OR PART TIME	CONTACT HOURS: CLASSES	CONTACT HOURS: LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	INSTITUTIONAL DATA: CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	INSTITUTIONAL DATA: PUBLIC INST.	REMARKS
Oakland Comm Coll Applied Tech Dept 2900 Featherstone Rd Auborn Hts 48016 Dr Bill Rose Mr Ed Konopka 313/852-1000	Robotics Systems Technology	X				X		1	MS	5-10	F	4	4	82	400		X	
Schoolcraft Coll Technology Dept 18600 Haggerty Rd Livonia 48152 Mr Fernon P Feenstra 313/591-6400	Robotics Service Technologist Robot Application Technician	X				X		1	MS	10+		3/5	0/4	83	100		X	
Washtenaw Comm Coll 4000 E Huron River Rd PO Box D-1 Ann Arbor 48106 Mr Roger Bertoia Mr George Agiu 313/973-3474 313/973-3300	Robotics Technology	X				X		2	MS	10+		6	4	82	80		X	
Delta Coll Technical Div University Center 48710 Mr Don Holzhei 517/686-9442	Robotics Technology	X				X		4	MS	0-5		4	2	83	60		X	
Grand Rapids Jr Coll Technology Div 143 Bostwick NE Grand Rapids 49503 Mr Don Boyer 616/456-4860	Automated Manufacturing Technology	X				X		5	MS	10+		3/4	4	84	-		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

MICHIGAN (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
S W Michigan Coll Cherry Grove Rd Dowagiac 49047 N C Ashcraft, Dean																	X	Being developed
Kellogg Comm Coll 450 N Ave Battle Creek 49016 Marut Patel 616/965-3931	Automated Manufacturing	X				X		3	MS	10+	F	3-4	4	83	20		X	
Kirtland Comm Coll Rt 4, Box 59A Roscommon 48653 L L Thayer 517/275-5121, ext 245	Electronics	X					X	1	BS	10+	F	2	4	83	9		X	
Alpena Comm Coll Alpena 49707 A E Reed 356-9021, ext 233	Industrial Engineering	X					X	1	MS	10+		0	2	83	1		X	
Jackson Comm Coll 2111 Emmons Rd Jackson 49201 Ralph Burdick 517/787-0800	Robotics/ Automation	X				X		4	BS MS	5-10		2-3	3	83	15		X	
Lansing Comm Coll PO Box 40010 Lansing 48901 Donald B Olson 483-1380	Electrome-chanical Technology	X					X	3	MS	10+	F	40-60		83	50		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

MICHIGAN (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Montcalm Comm Coll 1464 W Sidney Rd Sidney 48885 Jesse Fox 517/328-2111	Industrial Technology				X		X										X	Support course only
Monroe County Comm Coll 5555 Raisinville Rd Monroe 48161 Jim Stanley				X													X	Being developed
C S Mott Comm Coll Mechanical Tech 14500 Twelve Mile Rd Warren 48093 Prof L Ford 313/445-7327	Robotics & Flexible Automation	X				X		4 15	MS	10+	F P	3	2	81	1K		X	250 graduates
StClair County Comm Coll 323 Erie St Port Huron 48060 Mr F Mitchell 313/984-3811	Robotics Technology	X				X		1 3	MS	10+	F P	2	3	82	70		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

MINNESOTA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Granite Falls AVTI Hwy 212 W Granite Falls 56241 Duane Olson 612/564-4511	Robotics/ Flexible Automation			X		X		6	BS	10+		6	3hr day	83	44		X	
Staples AVTI 300 3rd St N Staples 56479 David Carroll 218/894-2430	Robotics Application Technician			X		X		2	AS BS	0-5		16	16	83	20		X	
Wilmar Tech Inst PO Box 1097 Wilmar 56201 John Lambing 612/235-5114, ext 181	Electronics Engineering Tech			X			X	1	BS	10+				81			X	Robotics included in other courses
Alexandria Tech 1601 Jefferson St Alexandria 56308 J E Seim 612/762-0221	Fluid Power Technology			X			X	1	BS	5-10		6	15	78	48		X	100 graduates
Mesabi Comm Coll Virginia 55710 Kenneth Pontimen 218/741-9200		X															X	Being developed
Tech-Voc Inst 235 Marshall Ave St Paul 35102 Dr G Richter 612/221-1320	Electrome-chanical Technology			X			X	4	BS MS	10+		4	15	83	305		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

MISSISSIPPI

SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OR CERTIFICATE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Itawamba Jr Coll 653 Eason Blvd Tupelo 38801 Mr Charles Chrestman Asst Dir Harry Presley 601/842-5621	Robotics Technology	X				X		6	AS BS	5-10	F	6	4	83	24		X	
Hinds Jr Coll Box 290 UJC Utica 39175 William Parks 601/885-6062	Industrial Technology	X					X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

MISSOURI SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Jefferson Coll PO Box 126 Hillsboro 63050 James Newman Dr Ray Walsh, Dean Tech Ed 314/789-3951	Robotics	X				X		3	AS BS	5- 10	F	3	1	83	35		X	
St Louis Comm Coll Forest Park 5600 Oakland Ave St Louis 63110 Mr Dan Landiss, Chmn Elec Engr Dept 314/644-9100	Robotics Technology	X				X		4 4	MS	0-5	F P	3	2	83	40		X	
Penn Valley Comm Coll 3201 SW Trafficway Kansas City 64111 Robert Crockett 816/932-7649	Electrome- chanical Tech Microproces- sors	X					X	2	BS	10#		6	3	84	120		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NEBRASKA

SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
S E Comm Coll AR2 Box 153 Milford 68405 Earl Fosler 402/671-2131	Electronics Engineering Technician	X					X	3	AS	0-5	F			81	42		X	25 graduates
Central Comm Coll, Platte Campus PO Box 1027 Bill Kucera 402/564-7132	Electronics Computers & Automation	X					X	2	AS MS	10+		2	4	83	20		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NEW JERSEY SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Middlesex County Coll Edison 08818 Jack Weintraub 201/548-6000	Elect Engr Tech	X					X										X	Being developed
Camden County Coll Box 200 Blackwood 08012 Prof W Blake 609/227-7200		X															X	Being developed
Somerset County Tech Inst, Box 6350 Bridgewater 08[illegible] John Kuklis 201/526-8900	Electrome-chanical Tech Robotics Option	X					X	2	BS	5-10		3-7	4	84	10		X	
Gloucester County Coll Tanyard Rd Sewell 08080 John Cassady 609/468-5000	Microproces-sors	X					X	2	BS	10+				83	-		X	
Bergen Comm Coll 400 Paramus Rd Paramus 07652 Prof John Burke 201/447-7100, ext 3317	Robotics (Course)			X			X	1	MS	5-10		4	2	84	17		X	
Union County Coll 1033 Springfield Ave Cranford 07016 James Newman 201/889-4100	Electrome-chanical Tech	X					X	2 1	MS	10+	F P	3	3	83	125			

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NEW MEXICO SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED					PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Albuquerque Tech Voc Inst 525 Buena Vista SE Albuquerque 87106 Mr Cecil Lennox 505/848-1400	Instrumentation & Control		X				X	3	HS BS AS	10+		7	8	80	120		X	160 graduates

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NEW YORK SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED					PROGRAM			INSTRUCTORS			CONTACT HOURS			INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Cooper Union for Advancement of Science & Art 51 Astor Pl New York 10003 Prof Shetty 212/254-6300		X					X	2	PhD	5-10		3	2	84	20	X		
Columbia Green Comm Coll Box 1000 Hudson 12534 William Thompson 518/828-4181	Electronics Tech	X					X										X	Being developed
Corning Comm Comm Coll Corning 14830 Prof Charles Hauser 607/962-9243	Industrial Tech	X					X	4	BS MS PhD	0-10+		3	3	82	40		X	120 graduates
Niagara County Comm Coll 3111 Saunders Settlement Rd, Sanborn 14132 Pascal Zanzano 716/731-3271	Mechanical Tech	X					X	1½	MS	5-10		1	3	84	14		X	
Erie Comm Coll 121 Ellicott St Buffalo 14203 Thomas Lemke 716/675-5444	Manufacturing Technology Robotics	X				X		2 4	BS MS	5-10+	F P	3	3	83	62		X	
Queensborough Comm Coll 56th Ave & Springfield Blvd, Bayside 11364 B G Schieber, Jr 212/631-6294	Mechanical Engineering Technology	X					X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

NEW YORK (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
SUNY at Alfred Alfred 14802 David Conde 607/871-6350		X															X	Being developed
Jamestown Comm Coll 525 Falcomer St Jamestown 14701 Charles Rondeau	Electronics, Computer, Mechanical Technology	X					X	1	MS	10+		3	3	83	24		X	
Adirondack Comm Coll Bay Road Glens Falls 12801 Hubert West 518/793-4491																	X	Being developed
SUNY Ag & Tech Coll Delhi 13753 C Nichols 607/746-4228	Industrial Tech	X					X	1	BS	10+		1	2	83	12		X	
Herkimer County Comm Coll Herkimer 13350 Frank Menapace 315/866-0300	Prerobotics Technology	X				X		1	MS	10+		3	2	84	3		X	
Rockland Comm Coll 145 College Rd Suffern 10901 Ignacio Stanley 914/356-4650	Electrome-chanical Technology	X					X	2	BS MS	5-10		6	2	84	12		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NEW YORK (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Orange County Comm Coll 115 South St Middletown 10940 Arlin Bartlett 914/343-1121	Electronics/ Computer Systems	X					X	5	MS PhD	5-10+		6	9	81	12		X	40 graduates

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NORTH CAROLINA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DEGREE OFFERED: DIPLOMA	DEGREE OFFERED: CERTIFICATE	DEGREE OFFERED: SHORT COURSE	DEGREE OFFERED: INDEPENDENT	DEGREE OFFERED: PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	PROGRAM: EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	INSTRUCTORS: FULL OR PART TIME	CONTACT HOURS: CLASSES	CONTACT HOURS: LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	INSTITUTIONAL DATA: CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	INSTITUTIONAL DATA: PUBLIC INST.	REMARKS
Rowan Tech Coll Box 1595 Sallsbury 28144 John Burns 704/637-0760	Manufacturing Engineering Technology	X					X										X	Being developed
Ashville-Buncome Tech Coll, 340 Victoria Rd, Ashville 28801 Olin Wood			X														X	Being developed
Davidson County Comm Coll, Box 1287 Lexington 27292 Charles Su 704/249-8186	Mechanical Technology	X					X										X	Being developed
Pitt Comm Coll PO Drawer 7007 Greenville 27834 E Bright 919/756-3130	Electronics Tech	X					X	6	BS	0-5	F	10	12	82	60		X	75 graduates
Tri-County Comm Coll PO Box 40 Murphy 28906 Walter L Tratham 704/837-6810		X						X	1	PhD	10	F	3	4	83	3		X
Surry Comm Coll PO Box 304 Dobson 27030 John Collins 386-8121	Electronics	X					X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NORTH CAROLINA (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED					PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Forsyth Tech Inst 2100 Silas Creek Pkwy Winston-Salem 27103 John Beeson 919/723-0371	Manufacturing Engineering Technology	X					X	1	BS			3	2	84	36		X	
Maryland Tech PO Box 547 Spruce Pine 28777 J Cox	Electrical Engineering Technology	X					X	2	BS MS	10+		10	4	82	16		X	16 graduates
Wilkes Comm Coll Wilkesboro 28697 Josephine Hendrix 919/667-7136	Electrome-chanical Electronics	X					X										X	Being developed
Tech Coll of Almance PO Box 623 Haw River 27258 R R Stockard 919/578-2002	Engineering Tech	X					X	1	MS	10+		5	3	84	25		X	
Central Piedmont Comm Coll, PO Box 35009 Charlotte 28235 T A Allison 704/373-6786	Electrical/ Electronics Engineering Tech	X					X	2	BS MS	5- 10+		3	3	83	15		X	
Nash Tech Coll Old Carriage Rd Rock Wound 27809 Jerome Hodges 919/443-4011	Electronics Engineering Tech	X					X	3	BS MS	0- 10		4	4	83	15		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

NORTH CAROLINA (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Piedmont Tech Coll Box 1197 Roxboro 47573 Dr Rentz 919/599-1181		X															X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

NORTH DAKOTA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
North Dakota School of Science, Technical Div Wahpeton 58075 Mr Don Stevenson 701/671-2278	Robotics & Adv Welding	X				X		2	BS	5-10+	F	21	15	84	14		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

OHIO

SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Kent State Univ 14111 Claridon-Troy Rd Burton 44021 Gregory Shrene 216/834-4187	Computer-Integrated Manufacturing	X				X		1	PhD	10+		2	3	83	20		X	
Owens Tech Coll Caller 10000 Toledo 43699 Dave Winters 419/666-0580	Electrome-chanical (Robotics)	X				X		3	MS	0-5		3	3	83	211		X	
Ohio Univ 1570 Granville Pike Lancaster 43130 Zale Maxwell 614/654-6711	Industrial Technology Electronics Technology	X					X	3	MS	5-10		4	2	80	75		X	15 graduates
Southern Ohio Coll 4781 Hamilton Ave Cincinnati 45223 Robert Hockstra 513/681-0580	Robotics & Automated Mach	X				X		6	BS	10+		4	4	83	400	X		
Lima Tech Coll 4300 Campus Or Lima 45804 Norman Rex 419/227-5131	Basic Robotics	X				X		2	BS MS	5-10+		6	4	84	15		X	
Stark Tech Coll 6200 Frank Ave Canton 44720 Charles Oanner 216/494-6170	Mechanical Engineering Technology	X					X	1	MS	5-10	2	2		84	25		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

OHIO (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM			INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Lorain County Comm Coll 1005 N Abbe Rd Elyria 44035 Clyde Welsh 216/365-4191	Robotics	X				X		3	AS MS	0-10		2	4	83	257		X	
Wright St Univ West Ohio Branch 7600 St Rt 703 Celina 45822 Art Burd 419/586-2365	Electronics Engineering Technology	X					X										X	Being developed
Terra Tech Coll Engineering Dept 1220 Cedar St Fremont 43420 Tom Kisseld 419/334-3886	Electrical/ Robotics	X				X		2	AS MS	5-10+		3	5+	82	90		X	
Clark Tech Coll 570 E Leffels Lane Springfield 45505 Dr Monte Coffin 513/325-0691, ext 255	Mechanical Engineering Technology	X					X	2	MS	5-10	F	6	3	84	40		X	
North Central Tech Coll PO Box 648 Mansfield 44901 E C Boso 419/747-4999	Mechanical Engineering Technology	X					X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

OHIO (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Cincinnati Tech Coll 3520 Central Pkwy Cincinnati 45223 Rob Speckert 513/559-1520	Computer-Integrated Manufacturing	X				X		2+	BS MS	5-10		3-5	2-4	83	250		X	
Ohio Northern Univ Ada 45810 Dr Leo Maier, Jr 419/772-2385					X	X		1	PhD	10+		3	2	83	34	X		
Firelands College, Bowling Green State Univ 901 Rye Beach Blvd Huron 44839 419/433-5560	Engineering Technology	X					X	2 1	MS PhD	10+	F P	10	16	79	55			28 graduates
Shawnee St Coll 940 2nd St Portsmouth 45662 C R Irwin 614/354-3205	Electrome-chanical	X					X	3	AS BS	5-10+		3	3	84	25		X	
Central Ohio Tech Coll Engineering Div University Dr Newark 43055 Mr Walker 614/366-9250	Electrome-	X					X	1	BS	10+		3	5	82	34		X	30 graduates

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

OKLAHOMA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DEGREE OFFERED: DIPLOMA	DEGREE OFFERED: CERTIFICATE	DEGREE OFFERED: SHORT COURSE	DEGREE OFFERED: INDEPENDENT	PROGRAM: PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	PROGRAM: EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	INSTRUCTORS: FULL OR PART TIME	CONTACT HOURS: CLASSES	CONTACT HOURS: LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	INSTITUTIONAL DATA: CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	INSTITUTIONAL DATA: PUBLIC INST.	REMARKS
El Reno Jr Coll Box 370 1300 S Country Club Rd El Reno . 73036 Miller Tiger 405/262-2552	Electronics Technology	X					X										X	Being developed
Oklahoma St Tech Okmulgee 74447 Bill J Lyons 918/756-6211	Computer-Integrated Syst Service	X					X	1	BS	10+		9	10	83	15		X	
O S U Tech Inst 900 N Portland Oklahoma City 73107 Dr D Yeager 405/947-4421	Electronics & Industrial Drafting Tech	X					X	2	BS MS	10+		3	2	83	40		X	80 graduates
Rose St Coll 6420 SE 15th Midwest City 73110 John Hansen 405/733-7450	Electronics Technology, Robotics Option	X					X	3	MS PhD	5-10+		3	2	83	25		X	
Tulsa Jr Coll 3727 E Apache Tulsa 74115 Ron Paquette 918/834-5071	Electrome-chanical & Robotics Technology	X				X		2	BS	5-10		4	2	84	54		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

OREGON SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM			INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Portland Comm Coll 12000 SW 49th Ave Portland 97219 Dr Robert Dixon 503/244-6111	Electr Engr Tech						X										X	Being developed
Mt Hood Comm Coll 26000 SE Stark Gresham 97030 Dr R S Nicholson 503/667-6422	Automated Systems Technology	X															X	Being developed
Lane Comm Coll 4000 E 30th Eugene 97405 Jim Krizor 503/747-4501, ext 2245	Computers & Robotics			X		X		1	MS	0-5		5	3	84	18		X	
Clatsop Comm Coll 16th & Jerome St Astoria 97103 Gilbert Doty 503/325-0910	Electronics Technology	X					X	2	BS	0-5		6	4	83	10		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

PENNSYLVANIA

SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Mach Shop Tech Inst 110 S Main St Pittsburgh 15220 Frank Sanns 412/922-2602	Robotic Engineering Tech	X				X		5	BS	10+		5	25	83	40	X		
Westmoreland County Comm Coll Youngwood 15697 David Bruce 412/925-4008	Electronics Tech	X					X	3	BS	0-5	P	3	3	83	18		X	
Comm Coll of Allegheny County, South Campus 1750 Clairton Rd West Mifflin 15122 Pearly Cunningham 412/469-1100	Science & Engineering Technology	X					X										X	Being developed
Delaware County Comm Coll Media 19063 Glenn Artmay 215/359-5288	Automated Manufacturing /Robotics	X				X											X	Being developed
Pennsylvania Inst of Technology 800 Manchester Media 19063 W Koffke 215/565-7900	Automated Manufacturing	X				X		2	MS	0-5	F	4	2	83	50	X		

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

PENNSYLVANIA (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Williamsport Comm Coll Williamsport 17706 George Baker 717/326-3761	Industrial Technology	X					X										X	Being developed
Lehigh County Comm Coll 23700 Main Schnelksville 18078 Ed Troyhan 215/799-1507	Electronics Microcomputer	X					X	MS	10+		4	4					X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

SOUTH CAROLINA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	INSTITUTIONAL DATA: PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Piedmont Tech Coll Electronic Engr Tech PO Drawer 1467 Greenwood 29648 Mr James Rehg 803/223-8357	Robotics Technology	X			X	X		2	MS	10+		7	8	83	30		X	
Aiken Tech Coll PO Drawer 696 Aiken 29801 James Wertz 803/593-9231	Electrome-chanical Tech	X					X	2	BS MS	10+	F	3-8	3-9		45		X	
Spartanburg Tech Coll Drawer 4386 Spartanburg 29305 Kemp Sigmon	Industrial Management Technology	X					X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

SOUTH DAKOTA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Northern St Coll Aberdeen 57401 Dr Terry Richardson 605/622-2571	Industrial Technology	X					X	1	PhD	10+		2	3	83	132		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

TENNESSEE SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Motlow St Comm Coll Industrial Tech Tullahoma 37388 Mr Jasper Templeton 615/455-8511	Engineering Technology	X					X	1	MS	10+		3	0				X	Being developed
Columbia St Comm Coll Hampshire Pk Columbia 38401 Clyde Denton 388-0120, ext 329	Electronics Technology	X					X	1	BS MS	5- 10+		3	3	84	12		X	
Chattanooga St Tech Coll 4501 Amnicola Hwy Chattanooga 37406 Oliver Benton 615/697-4411	Robotics	X				X		3	MS PhD	5- 10+	F	3	2	83	68		X	
Dyersburg St Comm Coll PO Box 648 Dyersburg 38024 John Moore 901/285-6910	Industrial Electronics	X					X	1	MS	5- 10	F	3	3	84	16		X	
Nashville St Tech Inst 120 White Bridge Rd Nashville 37709 Joel Lavaller 615/741-1235	Automation/ Robotics Technology	X				X		2	BS MS	0-5		3	3	83	83		X	
Walters St Comm Coll Morristown 37814 Safabakhsh, Reza 615/531-2121	Electrome-chanical & Robotics Technology	X															X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

TENNESSEE (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED					PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA			REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Tri-Cities St Tech Inst Box 246 Blountville 37617 Jim Chandler 615/323-3191	Mechanical Engineering Technology	X					X	2	MS	10+		3	3		54		X	
St Tech Inst of Memphis 5983 Macon Cove Memphis 38134 Les Seager 901/377-4214	Robotics & Automated Mfg				X		X	2	BS MS	0-5		3	3	83	20		X	
St Tech Inst at Knoxville, Division St Knoxville 37919 Frank Darwin 615/584-6103	Engineering Technology	X					X	1 1	BS	10+	F P	3	3	84	12		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

TEXAS SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Midland Coll 3600 N Garfield Midland 79701 Dr Richard Holmes 915/684-7851	Robotics				X	X		1	BS	10+		3	3	83	15		X	
Tarrant County Jr Coll 5301 Campus Dr Fort Worth 76119 Jim Moore 817/531-0430	Electrome-chanical Tech	X					X	2 2	BS	5-	F P	2	3	82	50		X	
Hill Jr Coll PO Box 619 Hillsboro 76645 Jim Poole	Industrial Electronics/ Robotics	X					X	1	BS	10+		6	3	84	1	X		
Houston Comm Coll PO Box 7849 Houston 77270 Reddy 713/868-0787	Computer Manufacturing Technology	X				X											X	Being developed
Grayson County Coll 601 Grayson Dr Denison 75020 Joe Shults 405/465-6030, ext 271	Electronics Technology	X					X	3	MS	10+	F	6	6	84	13		X	
Lee College PO Box 818 Baytown 77520 J C Lockett 713/427-5611, ext 366	Electronics Technology	X					X	1	BS	5-10		6	3	84				Fall

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

TEXAS (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Richland Coll 12800 Abrams Rd Dallas 75243 Harold Albertson 214/238-6330	Engineering Technology/ Robotics Option	X					X	4	MS PhD	10+		3	3	83	20		X	
El Paso Comm Coll Box 20500 El Paso 79998 Diane Katroyer 915/594-2197																	X	Being developed
Brookhaven Coll 3939 Valley View Ln Dallas 75234 JoAnn Killinger 214/620-4822	Engineering Technology	X					X										X	Being developed
Mountainview Coll 4849 W Illinois Ave Dallas, 75211 Stan Fulton 214/333-8722	Engineering Technology, Robotics Option	X					X										X	Being developed
Texas State Technical Institute-Sweetwater Sweetwater 79556 Mr Homer Taylor 915/235-8441	Automated Manufacturing Technology	X				X		2	BS	0-5	F	10	20	84	40		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

UTAH SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM			INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Utah Tech Coll at Salt Lake Box 31808 Salt Lake City 84131 Joe Saker 801/967-4235	Advanced Computers	X					X	2	AS BS	5- 10		25	10	84	30		X	

ROBOTICS / AUTOMATED SYSTEMS TECHNICIAN TRAINING SUMMARY

VIRGINIA SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Wytheville Comm Coll 1000 E Main St Wytheville 24382 Dr Y P Hwu 703/228-5541	Electronics Technology		X				X										X	Being developed
Tidewater Comm Coll Virginia Beach Campus 1700 College Crescent Virginia Beach 23456 Dr Jag Mathur 804/427-3070	Electronics	X					X										X	Being developed
SW Virginia Comm Coll PO Box SVCC Richlands 24641 T Hopkins 703/964-2555	Electronics	X					X	1	MS	0-5		2	1	83	22		X	2 graduates
J Sargeant Reynolds Comm Coll Box 12084 Richmond 23241 Dr T Diamond																	X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

WASHINGTON SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM			INSTRUCTORS			CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Renton VoTech Inst 3000 NE 4th Renton 98056 Emmet Huston 206/235-2367	Equipment & Maintenance/ Rebuild Robotics			X		X		1		10+				82	18		X	8 graduates
Centralia Coll 600 W Locust Centralia 98531 B J Butters 206/736-9391	Electronics	X					X	2	BS	10+		4	2	84	14		X	
Spokane Comm Coll N 1810 Greene St Spokane 99207 Richard Cox 509/536-7158	Computer-Controlled Equipment/ Robotics Technician	X				X		5	AS	10+		28	13				X	Fall 1984
L H Bates VoTech 1101 S Yakima Ave Tacoma 98405 T George & George Cannan 206/597-7233	Industrial Electronics			X			X	2	AS	5-10	F	3	4+	83	30		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

WISCONSIN SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Moraine Park Tech Inst Fond Du Lac Campus 235 N National Ave Fond Du Lac 54935 Keith Draykowski 414/922-8611	Robotics Application & Management Technician	X				X		1	BS	5-10		2	2	83	18		X	
Waukesha County Tech Inst 800 Main St Pewaukee 53072 Don Krummel 414/548-5345	Material Handling/ Robotics			X			X	4	BS	5-		25	22	83	16		X	
Milwaukee School of Engr PO Box 644 Milwaukee 53201 Thomas Davis 414/277-7324	Computer-Integrated Manufacturing			X		X		1	MS	5-10		2	2	81	90	X		60 graduates
Gateway Tech Inst 3520 30th Ave Kenosha 53141 Stuart Vorpagel 414/656-6940	Inst-Elect Mech Tech	X					X	1	BS	10+		5	4	83	35		X	
Wisconsin Indianhead VTAE 505 Pine Ridge Dr, Box B Shell Lake 54871 Howard Sonnenburg 715/468-2815	Electrome-chanical Tech	X		X			X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

WISCONSIN (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Milwaukee Area Tech Coll 1015 N 6th St Milwaukee 53203 Jose Gonzalez 919/278-6696	Industrial Robotics			X		X		1	BS	10+		4	2	83	19		X	
Western Wisconsin Tech Inst 6th & Vine LaCrosse 54602 William Welch, Jr 608/785-9178	Electrome-chanical	X			X		X		BS PhD	5-10		2	4	83	17		X	
North Central Tech Inst 1000 Campus Dr Wausau 54401 Marvin Bausman 715/675-3331	Electrome-chanical Technician	X					X	2	AS MS	10+		5	3	83	20		X	
Fox Valley Tech Inst Box 2277 Appleton 54913 Virgil Noordyle 414/735-5783	Electrome-chanical Technology	X					X	4	MS	5-10		4	4	79	25		X	40 graduates
Blackhawk Tech Inst Box 5009 Jonesville 53547 Gene Hilst 608/756-4121	Electrome-chanical Technology	X					X	3	MS	10+		6	4	84	16		X	
Lakeshore Tech Inst 1290 North Ave Cleveland 53015 Mel DeSwarte 414/684-4408	Electrome-chanical Technology	X		X			X										X	Being developed

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

WISCONSIN (continued) SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED: ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	PROGRAM: NUMBER REQUIRED	EDUCATION LEVEL	INSTRUCTORS: INSTR. EXPERIENCE	FULL OR PART TIME	CONTACT HOURS: CLASSES	LAB	INSTITUTIONAL DATA: YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	REMARKS
Wisconsin Indianhead Tech Inst 600 N 21st Superior 54880 Raymond Johnson 715/394-6677	Electronics Technology	X					X	3	BS	0-5		4	6	83	90		X	

ROBOTICS / AUTOMATED SYSTEMS
TECHNICIAN TRAINING SUMMARY

WYOMING SCHOOL & ROBOTICS COORDINATOR	PROGRAM TITLE	DEGREE OFFERED						PROGRAM		INSTRUCTORS				CONTACT HOURS		INSTITUTIONAL DATA		REMARKS
		ASSOC. APPL. SCI.	DIPLOMA	CERTIFICATE	SHORT COURSE	INDEPENDENT	PART OF ANOTHER SPECIALTY	NUMBER REQUIRED	EDUCATION LEVEL	INSTR. EXPERIENCE	FULL OR PART TIME	CLASSES	LAB	YR. FIRST OFFER	CURRENT ENROLLMENT	PRIVATE SCHOOL	PUBLIC INST.	
Casper Coll 125 College Dr Casper 82601 H M Dinges 307/268-2600	Electronics	X					X	1	BS	5-10		3	4	83	10		X	

APPENDIX C

BIBLIOGRAPHY

	NUMBER OF SCHOOLS	COMPETENCY BASED
Asfahl, C.R. Robotics and Manufacturing Automation. New York: John Wiley & Sons, 1984.	2	
Bondi and Robino, Robotic Applications for Pneumatics and Hydraulics. Arlington Heights, IL: Amptronics, 1983.	1	
Brady. Robot Motion. Cambridge, MA: MIT Press, 1983.	1	
Brown, C.M. and Ballard, D.H. Computer Vision. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1982.	1	
Cassell, D. Microcomputers and Modern Control Engineering. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1983.	1	
Chmiekwski, T.; Klatter, R.; Negin, M. Robotics: An Integrated Approach to the Technology. New York: John Wiley & Sons, 1984.	1	
Dorf, R.C. Robots and Automated Manufacturing. Reston, VA: Reston, 1983.	14	
Engleberger, J. Robotics in Practice, AMA COM, 1980.	12	
Goetsch, D.L. CAD/CAM Workbook. S.W. Publishers, 1983.	1	
Grover, Mikell P. Automation, Production Systems and CAM. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1980.	1	
Hall, D.V. Microprocessor and Digital Systems. New York: McGraw-Hill Book Co., Inc., 1980.	1	
Heath, L. Robotics - Theory and Application of Industrial and Educational Robots. Reston, VA: Reston Publishers.	3	
Holland, V.M. Basic Robotic Concepts. Indianapolis, IN: Howard W. Sams, 1983.	1	
Hunt, V.D. Industrial Robotics Handbook. New York: Industrial Press, 1983.	1	
Industrial Robots, Vo. I & II. 2nd ed. Dearborn, MI: Society of Manufacturing Engineers, 1983.	4	

	NUMBER OF SCHOOLS	COMPETENCY BASED
Johnson. Process Control Instrumentation Technology. 2nd ed. New York: John Wiley & Sons, 1982.	1	
Jones, P. Robotics for Safety and Profit. P-P Publications, 1981.	1	
Kafrissen & Stephens. Industrial Robots and Robotics. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1984.	8	
Konopka, E. Robotic Gears, Drives, Linkages. Utica, MI: Automation Robotics, 1983.	1	
Koren. Computer Control of Manufacturing Systems.	1	
Krouse, J.K. What Every Engineer Should Know About Computer-Aided Design and Computer-Aided Manufacturing. New York: Marcel Dekker, Inc., 1982.	1	
Lab Manual for I/O Controllers. ASCII Marketing Group.	1	
Maloney, T.J. Industrial Solid-State Electronics: Devices & Systems. Englewood Cliffs, NJ: Prentice-Hall, Inc. 1979.	1	
Madtaba, S. The AL Robot & Programming Language. Reston, VA: Reston Publishers, 1983.	1	
Osborne, D. Robots. Midwest Sci., 1983.	1	
Paul, R.C. Robot Manipulators, Mathematics, Programming and Control. Cambridge, MA: MIT Pressi, 1981.	8	
Rehg, J. Introduction to Robotics, A Systems Approach. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1984.	1	
Robillard, M. J. Microprocessor Based Robotics. Indianapolis, IN: Howard W. Sams, 1983.	2	
Snyder. Industrial Robots: Interfacing and Control. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1984.	1	
Streitmatter and Fiure. Microprocessor Theory and Applications.	1	
Susnjara, Ken. A Managers Guide to Industrial Robots. Corinthian Press, 1982.	3	
Tompkins and White. Facilities Planning. New York: John Wiley & Sons, 1984.	1	
Understanding Electronic Control of Automation. TI Learning Center.	1	

This Bibliography is as complete as possible. Book titles were checked in Books in Print; several books are not listed in the 83-84 edition.

NOTE: Heath/Zenith and Society of Manufacutring Engineers textbooks were also identified but not listed by specific titles.

APPENDIX D

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
University of Arkansas Fayetteville, AR 72701 William Rader 501/575-3156	X	X	X	X							
California Poly State University San Luis Obispo, CA 93407 Dr Donald Morgan 805/546-2341			X								
Cogswell Polytechnical College 600 Stockton St San Francisco, CA 94108 Edwin Merrick 415/433-5550	X										
University of Southern California SAL-300, MC-0781 Los Angeles, CA 90089 Barry Soroka 213/743-5535					X						
California State University, Los Angeles 5151 State University Dr Los Angeles, CA 90032 Dr Ram Manvi 213/224-3541	X										
University of California, Davis Davis, CA 95616 Dr T C Hsia 916/752-1443										X	MS, Robotics/Automation
California State University 6000 I St Sacramento, CA 9582[illegible] Dr Mohammad Zand 916/454-7336										X	MS, Robotics/Automation
University of California at Los Angeles 405 Hilgard Ave Los Angeles, CA 90024 Dr Watteau 213/206-8525							X			X	BS, PhD, Manufacturing Engineering
San Francisco State University 1600 Holloway Ave San Francisco, CA Prof W Stadler 415/469-1386										X	BS, Robotics

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
Colorado State University Fort Collins, CO 80523 F W Smith 303/491-8655	X	X	X	X						X	BS, MS, Computer Engineering
University of Hartford West Hartford, CT 06117 Prof Hemond 203/243-4786	X										
University of Delaware Newark, DE 19716 Dr. A Kumar 302/451-2889	X	X									
Florida A & M University 307 Tech Unit A Tallahassee, FL 32307 Barry McConnell 904/599-3022										X	BS, Robotics & Undersea Technology
University of Florida Department of Electrical Engineering Gainesville, FL 32611 Dr Del Tesar 904/392-0814					X	X					
University of South Florida 4202 Fowler Ave Tampa, FL 33620 D L Kimbler 813/974-2269							X				
Florida Atlantic University Boca Raton, FL 33431 Yacov Shamash 305/393-3412					X	X				X	BS, MS, Computer Engineering
University of Central Florida Box 25000 Orlando, FL 32816 John Biegel 305/275-2615							X				
University of Miami Coral Gables, FL 33124 Dr David Sumanth 305/784-2344			X	X							

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
Georgia Tech Atlanta, GA 30332 Wayne Book 404/894-3247										X	MS, CIM
University of Illinois 1513 University Ave Urbana, IL 61801 Shiv Kapoor 217/333-3432	X	X	X	X							
Southern Illinois University Technology Building D Carbondale, IL 62901 Dr John McLuckie 618/536-3396								X	X		
Northwestern University Evanston, IL 60201 Prof C H Wu 312/492-5066							X				
Millican University 1184 W Main Decatur, IL 62522 J R Gross 217/424-6338			X								
Indiana State Technical University Terre Haute, IN 47802 Dr Larry Heath 812/232-6311										X	BS, Computer Engineering
Purdue University Lafayette, IN 47907 H L Banton 317/494-7514	X										
Indiana-Purdue University 2101 Coliseum Blvd Fort Wayne, IN 46805 Donald McAleece 219/482-5359	X										
ITT Technical Institute 9511 Angola Ct Indianapolis, IN 46268 Milton Kalapach 317/875-8640										X	Bachelor of Applied Science

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
ITT Technical Institute 1415 Profit Dr Fort Wayne, IN 46808 Dr Ed Kimble 219/484-4107										X	BS, Robotics/Automation
Iowa State University Ames, IA 50011 Eric Malstrom 515/294-1682			X	X							
Cowley County Community College Arkansas City, KS 67005 Don Hughes 316/442-0430					X						
University of Louisville Louisville, KY 49292 Herman Leep 502/588-6342				X							
Eastern Kentucky University Richmond, KY 40475 James Maslusno 606/622-3232								X			
Morehead State University UPO 774 Morehead, KY 40351 Robert Newton 606/783-2419										X	BS, Robotics/Automation
Louisiana Tech Ruston, LA 71272 Robert Warrington, Jr 318/257-2357	X	X									
Louisiana State University 3128 CEBA Baton Rouge, LA 70803 Dr William Biles 504/388-5112			X	X							
United States Naval Academy Annapolis, MD 21402 Dr Knowles 301/267-3468										X	BS, Weapons & Systems

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
University of Massachusetts Amherst, MA 01003 Dr L E Murch 413/545-2253	X						X				
Southeastern Massachusetts University North Dartmouth, MA 02747 Gilbert Fain 617/999-8476					X	X					
Michigan Tech University Houghton, MI 49931 M Deiseuroth 906/487-2551	X	X									
Lake Superior State College Sault Sainte Marie, MI 49783 James DeVault 906/635-2597									X		
Western Michigan University Kohrman Hall Kalamazoo, MI 49008 Fred Sitkins 616/383-4992									X		
Eastern Michigan University 104 Sill Hall Ypsilanti, MI 48197 Robert Parent 313/487-2040								X			
GMI Engineering & Management Institute 1700 West Third Flint, MI 48502 Jack Lane 313/762-7877	X										
Michigan State University College of Engineering East Lansing, MI 48824 Dr R L Tummala 517/355-7453					X	X					
University of Michigan, Dearborn Dearborn, MI 48128 Dr A Asward 313/593-5080			X	X							

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
University of Mississippi University, MS 38677 Dr C E Smith 601/232-7231					X						
University of Mississippi Box 5172, So Station Hattiesburg, MS 39406-5172 J W Lipscomb 601/266-4902								X			
University of Missouri, Rolla Rolla, MO 65401 R T Johnson 314/341-4614	X										
University of Missouri Truman Engineering Labs Independence, MO 64050 Dr S K Blundell 816/254-3663	X	X									
Farleigh Dickenson University 1000 River Road Teaneck, NJ 07666 Dr Rivin 201/692-2725	X										
SUNY College of Technology 811 Count St Utica, NY 13502 Prof Atlas Hsie 315/792-3542									X		
Columbia University 234 SW Mudd New York, NY 10027 G Klein 212/280-2955		X									
Clarkston University Potsdam, NY 13676 Dean E Misiaszek 315/268-6555	X	X			X	X					
RPI Troy, NY 12181 Dr Stephen Derby 518/266-6991	X	X					X				

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
Duke University Durham, NC 27706 Prof Paul Wang 919/684-3123					X	X					
North Carolina State University Raleigh, NC 27695-7911 W Snyder 919/737-2336					X	X					
University of Toledo 2801 Bancroft St Toledo, OH 43606 Dr R J McNichols 419/537-2412	X		X		X	X					
Ohio University Athens, OH 45701 R A Lawrence 614/594-5862	X	X						X			
University of Cincinnati ML 72 Cincinnati, OH 45242 Ernest Hall 513/475-5067	X	X	X	X							
University of Oklahoma Suite 124, 202 West Boyd Norman, OK 73019 A Ravindran 405/325-3721			X	X							
Carnegie-Mellon University Pittsburgh, PA 15213 Paul Wright 412/578-3529		X									
Swarthmore College Swarthmore, PA 19081 Frederick Orthlieb 215/447-7080										X	BS, Engineering
Drexel University 32nd and Chestnut Philadelphia, PA 19104 Dr Richard Klafter 215/895-2220						X					

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
University of Rhode Island College of Engineering Kingston, RI 02881 Robert Kelley 401/792-2514	X	X	X	X	X	X					
South Carolina State College Orangeburg, SC 29117 Uttam Makhopadhyay 803/536-7117									X		
Clemson University Clemson, SC 29631 F W Paul 803/656-3291		X									
University of South Carolina Columbia, SC 29208 Ronald Bonnell 803/777-4311					X	X					
Northern State College Aberdeen, SD 57401 Dr Terry Richardson 605/622-2571								X			
South Dakota School of Mines & Technology Rapid City, SD 57701 Dan Dolan 605/394-2409	X	X									
Texas A & M University College Station, TX 77843 G Peterson 409/845-4951									X		
University of Houston 4800 Calhoun Houston, TX 77004 Bill Drake 713/749-4652										X	BS, Mechanical Technology
University of Texas Austin, TX 78712 A E Traver 512/471-3059	X	X									

COLLEGES AND UNIVERSITIES OFFERING ROBOTICS TRAINING

SCHOOL/ ROBOTICS CONTACT PERSON	BSME	MSME	BSIE	MSIE	BSEE	MSEE	MS Mfg. Engr.	BS Ind. Tech.	BS Engr. Tech.	OTHER	REMARKS
Brigham Young University 242 P Clyde Bldg Provo, UT 84601 Edward Red 801/378-5539		X									
Webster State College MS 1802 Ogden, UT 84408 Roy Thornock						X					
University of Vermont Voter Building Burlington, VT 05405 Prof B vonTurkovich 802/656-3320	X										
Old Dominion University Norfolk, VA 23508 Alok Verma 804/440-4644										X	BS, Mechanical Technology
West Virginia University Morgantown, WV 26506 John Sneckenberger 304/293-3111	X	X									
West Virginia Institute of Technology 312 Davis Hall, WVIT Montgomery, WV 25136 Wiiliam Burns 304/442-3189							X				
University of Wisconsin, Stout FH 215 Menomonie, WI 54751 LA Schneider 715/235-6323						X					
University of Wisconsin, Madison 1513 University Avenue Madison, WI 53706 M F DeVries 608/262-0921						X					