



advanced
technologies
consultants

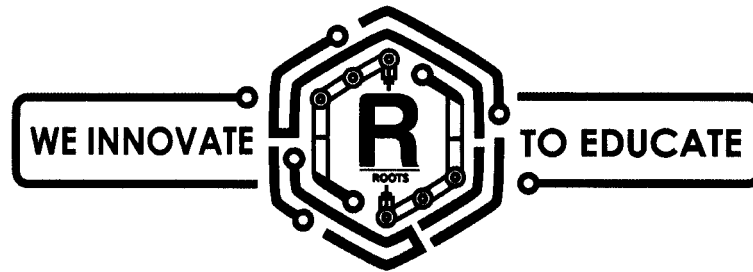
ADVANCED MANUFACTURING PROPOSAL

Presented To:
Temple College
August 11, 2025

Jath Candy - Regional Sales Representative
Advanced Technologies Consultants
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PROJECT PROPOSAL

ABOUT OUR COMPANY



At ROOTS Education Co. (REC), we provide kits so students can build systems, outfitting students, organizations, and educational institutions with valuable Career and Technical Education (CTE) services.

Through assessments, curriculum, simulation, and our (patented) adaptable hands-on lab training technology, ROOTS fully prepares students to step confidently into further education and high-earning advanced manufacturing and technology careers.

Program blueprints show that students emerge from ROOTS learning programs with full competencies beyond those offered by major competing bodies. ROOTS develops students' capabilities in a wide array of fields, such as advanced CTE programs in automation, advanced manufacturing, and the rapidly expanding field of collaborative robotics (Cobots). Through the diversified education and credentialing ecosystem REC offers, ROOTS students learn a complimentary variety of essential life and career skills, improving student education and employability outcomes.

Why ROOTS?

- Our concept is to collaborate with schools with a blank slate, identifying components and needs so students can be heavily involved with assembly, validation, programming & operation of a robotic work cell. This allows you to teach from a system that addresses local workforce needs. We provide the tools to guide students through theory, complimented by experiential learning with hands-on engagement during/ after the theory. In our more advanced levels, the students install, wire, program, fabricate, calibrate, teach, strategize, and develop their process all while competing and creating their own manufacturing cell.
- Each level educates students and instructors about science, technology, and engineering within the world of robotics to better understand Industry 4.0, and to create Employee 4.0.
- Our system is an engineered, customized approach that freely allows build and teardown, imagination, and integration.
- Working in advanced manufacturing requires a broad understanding of the factory's processes. Strategic training utilizing hardware and software creates a diverse base of innovators and problem-solvers.
- Industry 4.0 is a rapid evolution in how modern manufacturing operates. Student 4.0 requires access to equipment which enhances the educator's ability to keep pace with the ever-changing industry.
- Backed by our 70+ years in manufacturing.
- Backed by 100+ robotic installations on multiple continents.
- Training industry workers since 2004 in robotics best practices.
- Strategic partnerships in multiple states to improve cost and timing to you.
- ROOTS stays current as industry experts in manufacturing consulting.

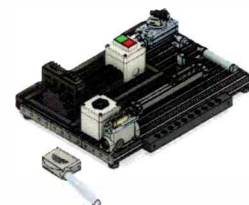
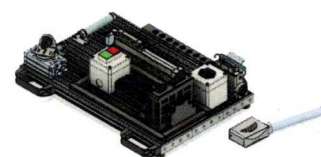


ABOUT YOUR KIT

The students will have a course where they must assemble, integrate, program, produce, package and make ready for shipment, an assembled product. Successful completion gives students first-hand training and knowledge of the parts required to integrate a robot, master facets of semiconductor related stations (Laser etch, Q-Span Metrology) coupled with handling and manufacturing flow, and depending upon options purchased, prepare them for employment in fields of Advanced Manufacturing, Semiconductor Technician, 3D printing (nylon based or metallic) and Global Logistics Technician. The instructors for this course will have access as if in a train-the-trainer scenario and coached with an air-tight curriculum that includes a Learning Management System (LMS) and turn-key curriculum within. This system will have the flexibility year-over-year for repurposing and reinventing new ways to learn, un-learn and re-learn.

Within the Advanced Processing Line, students will obtain the: A) Knowledge, Skills and Abilities to automate a 3D Bin Picking Process B) Knowledge, Skills and Abilities to automate a Product Assembly Process C) Knowledge, Skills and Abilities to automate a Surface Prep, Polishing and Cleaning Process D) Knowledge, Skills and Abilities to automate a Metrology Process E) Knowledge, Skills and Abilities to automate a Quality Inspection Process F) Knowledge, Skills and Abilities to automate a Packaging Process G) Knowledge, Skills and Abilities to automate an Autonomous Mobile Robot Delivery Process.

This Learning Factory will allow a student body to confidently secure their own pathway as; future Programmers, using Robotic languages, Vision system languages, Calibration and Metrology languages, Mathematics to define force, convert payloads, determine reach and orientation principles. Process Experts determining Quality and Operational improvements for the advanced production, offering significant process variation. Maintenance instruction, Maintenance theory and hands-on maintaining to keep all the machines and equipment operating properly.



Example Image for reference only.

PRODUCT DIFFERENTIATORS

KEY INPUTS:

1. Industrial Grade Cobots
2. Open sourced, so students can contribute to real world problems by becoming developers, not just followers
3. Safety Oriented
4. Designed for core integration with OEM equipment
5. Project (Lab) Based Curriculum
6. Designed to be installed by students with ROOTS oversight.
7. Simulator tools so all students can contribute at the same time
8. Independent interactive learning modules
9. Flexible to accommodate reconfiguration, repurposing and processing
10. Flexible to add and remove accessories
11. Flexible to enable creativity and imagination
12. Retained value to be sold back into Industry for new equipment
13. Onsite, Certificate based Train-the-Trainer offerings.

WHAT MAKES US DIFFERENT - "STUDENTS PUT THEIR PHONES DOWN":

1. Co-collaboration to meet specific needs
2. Private and customized training website

3. Designed for your region, for your employers
4. Minds-on, Hands-on approach
5. Designed to enable creativity, imagination and applied engineering
6. We focus on integration (most challenging part of manufacturing)
7. We create excitement, engagement, leaders and team skills - separating our programs from others
8. We range from a mix of Science and Art to create Technicians and Application Engineering prospects
9. Air tight curriculum (instructors don't require prior knowledge of robotics)
10. Expandable, can be networked and integrated with other equipment
11. Creative design allows students to make reconfigure, repurpose
12. Designed with Safety Training devices
13. Designed with Troubleshooting devices
14. Free Simulator software for all students
15. Provides project based tasks so students can solve problems in a team environment
16. Introduction to engineering skills are created with application based tools
17. Open source for students who prefer coding and development (Python based)
18. Industry 4.0 compatible

ABOUT YOUR KIT

Students with exposure to ROOTS have a significantly better understanding of engineering when choosing a pathway to college.

The TURN-KEY INSTALLATION OF A **MEDALLION PROCESSING LEARNING FACTORY**: With the procurement of this LEARNING FACTORY your students enjoy the practical knowledge of integrating and programming advanced components with Collaborative Robots. Raw materials will be presented to the system in variable configurations. Each table station will perform the necessary processes to achieve a sorted, machined or printed, engraved and inspected Medallion for visitors and students. This Learning Factory will emulate the standards in industry while challenging the students to overcome real-world scenario hurdles. Moreover, with Roots Curriculum and Train the Trainer instruction, the curriculum is designed that the instructor can re-create the integration process on their own for future cohorts. The students will have a class where they can assemble, integrate, and program this successfully; giving them firsthand training and knowledge of the parts required to integrate a robot and prepare them for the future. This system will have the flexibility year-over-year for re-purposing and re-inventing new ways to learn, un-learn and re-learn.

Optional capabilities allow the project to grow and change as the students become more adept and confident. Utilizing parallel learning strategies, a COBOT computer simulator, and project based learning, allows the entire class to be engaged and designing projects that will ultimately all work harmoniously as they are integrated together. Each class will start from the very beginning, assembling the stations from scratch if desired, imagining the unlimited ways the different modules can interact with each other, network among the other module teams and collaborate to reach the end goal...A fully operation robotic space that incorporates the latest technology available.

The students will have opportunity to manipulate robots and create code to make the robot perform functions. The possibilities of the code are endless and certain codes can be provided in advance for the teacher to allow the students to code. Having the students implement certain code successfully and having them create and design their own code is a wonderful way to promote a hands-on learning atmosphere that stimulates their minds preparing them for the future.

- Project Based Learning simulating manufacturing processes in the real world, problem solving with building 21st century skills; ultimately developing the capacity of young learners to become innovators and leaders.

Highlights:

- Open interfaces which conform to industrial standards
- Plug & produce methods
- Motivating, practical project exercises
- Fast conversion for various training scenarios
- Flexible robot cells to industry standards
- Solid and reliable machine networking
- We cover the local industries processes and needs such as electrical engineering, mechatronics, manufacturing, and maintenance.

Timeline:

This system has a 10-12 month lead-time.
This quote is valid until **September 15, 2025**

Scope:

Supply one (1) **MEDALLION PROCESSING LEARNING FACTORY** system with a programmed Kit to accompany Roots Curriculum.

- Additional scope in following pages.
- Price listed does NOT include all options, pricing will vary depending upon options selected.

CURRICULUM OVERVIEW

General Course Information

Prerequisites: NA

This course is designed to introduce the basic principles of robotics, including classification, safety, operation, integration, troubleshooting, and applications in the real-world robotics industry. Students use hands-on practices to become familiar with an industrial-grade robotic system.

Major Topics/ Concepts/ Skills/ Issues

- Introduction to cobots/robot characteristics
- Configuration of software, hardware, maintenance, and safety
- Programming/robot simulation
- Components of robotics/sensors, actuators, end-of-arm tooling
- Programming of Universal Robots and other optional Cobots
- Integration of alternative devices with ROOTS systems and Cobots
- Students demonstrate an understanding of industrial automation and robotics
- Students demonstrate an understanding of the benefits of using Cobots

Students learn about different types of tooling related to the robotic arm, demonstrating an understanding of:

- End-of-arm tooling
- Can identify the types and functions of grippers
- The differences between angular and
- Programming of devices

Students learn the functions of sensors and their applications in a robotic system, demonstrating an understanding of:

- Student will be able to demonstrate an understanding of various actuators programming
- Student will be able to demonstrate an understanding of integration with a robot.

Student will learn the function of actuators and their applications in an automated system

- Student will be able to demonstrate an understanding of various actuators
- Student will be able to demonstrate an understanding of integration with a robot.

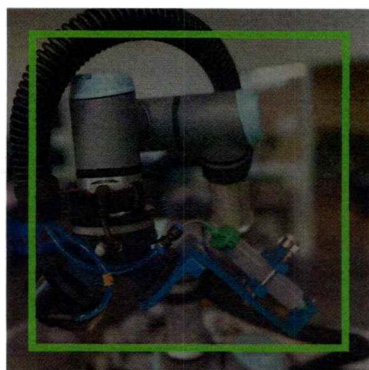
Students troubleshoot and learn basics of safety for an automated system

- Student will be able to demonstrate an understanding of how to troubleshoot a robotic system
- Student will be able to demonstrate an understanding of necessary protective steps to be taken when working with a robot

Assessment(s), Indicator(s) in this Course

- Classroom Examinations
- Hands-on practices
- Team Presentation
- End of class final project
- Act - implement effective problem-solving, decision-making, and goal-setting strategies
- Think - analyze data, ideas, patterns, principles, perspectives

EXAMPLE PROJECTS



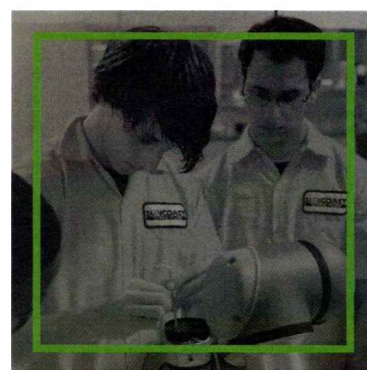
Sarasota County
HIGH SCHOOL PROJECT

This project consists of two High School units designed to be mobile and travel through each High School in the district for roughly eight weeks per session.



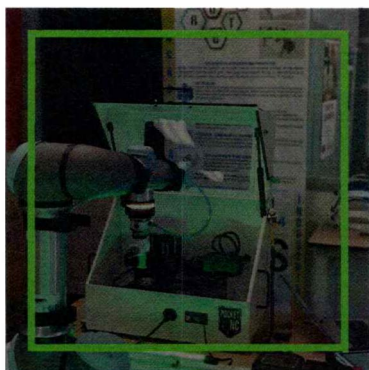
Valencia
VOTECH PROJECT

This project consists of one vocational level project that replaced a Fanuc robot on an education cart. Students are the integrator, ROOTS provides the initial instruction, and the teacher takes over following the initial training.



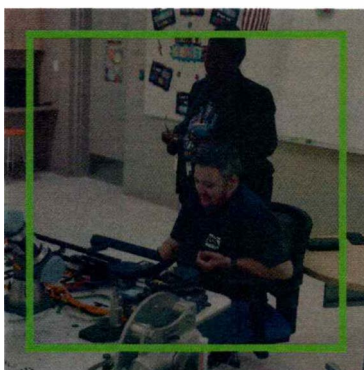
Suncoast Technical
VOTECH PROJECT

This project consists of a dual-enrollment program where High School students and adults install the robotic package by following instructions and ROOTS initial training.



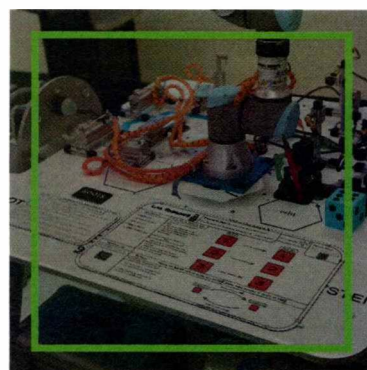
Immokalee Tech
VOTECH PROJECT

One of our most advanced Level 3 systems, Immokalee Tech, integrates a machining course with robotic training to prepare students for automated machine tending. This feeder project led to significant advancement in additional robotic training.



Manatee County
HIGH & MIDDLE SCHOOLS

With ten systems and counting, Manatee County has contracted ROOTS to procure and install systems in every Middle and High School in the county. These are pre-built systems with curriculum, including a Train-the-Trainer program to create pathways to manufacturing careers.



Manatee Tech
VOTECH PROJECT

This project began with one unit and continually added equipment and robots to accompany a learning factory model. Employers in the area work with the school for testing and simulation, and students rebuild new processes during each cohort.



EQUIPMENT OVERVIEW

DELIVERABLE

TOTAL

Machine Tending - Haas desktop CNC mill (2), UR5e cobot arm, ROOTS FlexTop table, Conveyor system, safety scanner, lighting package, conveyor system, Complete Subtractive Manufacturing Solution

Metrology System - 1 UR3e and Controller with brackets for securing, 1 Machine Interface Console for SPC monitoring, all required sensors and actuators to sort and prepare station with raw materials, 1 Q-Span Metrology Workstation with 3 automated calipers, 1 Adaptive Gripper(s), 1 Lighting package for safety communication 1 Roots FlexTop Mounting System, 1 IDrive Conveyor for moving materials to the next station

Serialization System - 1 UR3e and Controller with brackets for securing, all required sensors and actuators to sort and prepare station with raw or finished materials, 1 Safety Scanner protecting of personnel, 1 IDrive Conveyor for moving materials to the next station, 1 Adaptive Gripper, ultimate flexibility in products, 1 Lighting package for safety communication, 1 Roots FlexTop Mounting System, 1 Fume Extractor, 1 Inline Laser Marker with enclosure, all required subcomponents for a turnkey package

Assembly Station - 1 UR5e and controller with brackets for securing, all required sensors and actuators to sort and prepare station materials, 1 floor mounted Gantry 7th axis, 1 Gripper for part management, 1 Screw driving tool for assembly operations, 1 finishing tool for final product quality, 1 Lighting package for safety communication, 1 Large extruded aluminum table 1, all required subcomponents for a turnkey package

Sensor Training Kit - FTM (Flexible Training Module) (4) training devices consisting of various sensors, a panel assembly of terminal blocks, wiring and a control cable to connect to any robot, all required subcomponents for a turnkey package. Combined actuator package includes training devices consisting of various actuators, a panel assembly of terminal blocks, wiring and control cable to connect to any robot.

Air Prep Package - Filters/regulators, lines, valves actuators, ancillary equipment.

PLC System - 1 Siemens S7 1 Safety Controller 1 Mobile PLC Cart 1 Electrical Enclosure, 1 Teacher HMI, all communication cables, safety cables, installation, programming and screen development.

MAINTENANCE ADD-ON PACKAGE - Includes a USED UR5 robotic arm with a 3D print head, spare parts and components to allow for students to diagnose, troubleshoot, disassemble, repair, reassemble, test and re-commission a robot.

Installation, Onsite Training, LMS, Delivery - Roots supervised installation and installation documentation, planning and all hardware, 100 additional hours during student build for onsite Train the Trainer, LMS annual subscription.

1 Fetch AMR 100 with 5 year Fetch subscription to FetchCloud, Customized Roots Racking System, 1 Computer, Installation and Programming, Charger

Total Project Price

\$1,062,877.00

210902 Classroom and Teaching Aids Goods and Services

www.rootseducation.co

EXCLUSIONS

- *Costs nor labor for facility changes*
- *Costs nor labor for demo work*
- *Costs nor labor for utilities (all utilities within 6' of equipment i.e. air drops, electrical drops, water drops, drains, exhaust)*
- *Costs nor labor for required permits*
- *Payment to vendors (unless specifically hired by Roots Education Co.)*
- *Costs nor labor for rigging/unloading from truck (Roots Education has estimated delivery to facility in Kissimmee, FL only)*
- *Costs nor labor to secure storage of materials*
- *Costs nor labor for waste management*
- *Costs nor labor for safety equipment / PPE*
- *Equipment for potential (simple) fabrication during assembly*

TERMS AND CONDITIONS OF SALE

1. In consideration of the services to be performed by the Company, **Customer agrees to pay 50% downpayment of total, upon invoice. Net 30 days.**
2. Remaining payment due upon materials delivered or services rendered, Net 30 Days.
3. Purchase Orders addressed to: Advanced Technologies Consultants, 44800 Helm St. | Plymouth, MI 48170
4. Terms may not be changed without written consent of Advanced Technologies Consultants and ROOTS Education Co., LLC.

1. THIS PROPOSAL IS VALID UNTIL September 15, 2025

5. ACCEPTANCE

Unless a contrary provision is found on the face hereof, quotations may be withdrawn without notice at any time before receipt by the Company of an acceptance in writing. In addition, purchase orders received more than 30 days after date of quotation shall be subject to acceptance by the Company.

QUOTATIONS

All quotations are limited to the items and quotations of items herein specified. The company assumes no responsibility for the furnishing of any other equipment or material. Delivery lead times are currently 5- 7 months. All lead times are subject to production capacities and build times, and may extend past predicted delivery timeframes listed here. Delivery lead times do NOT include assembly or operation.

PRICES

Unless otherwise specified all prices are f.o.b. our office and are subject to change without notice unless a firm order is placed with the Company within thirty (30) days from the date of quotation.

TAXES

The amount of any applicable tax or other government charge upon the sale, shipment and/or use of goods covered by this quotation shall be added to the price and shall be paid by the Purchaser.

CANCELLATION

In the event of any cancellation of the order by either party, Buyer shall pay to Seller the costs and expenses (including all expenses and all commitments to its suppliers and subcontractors) incurred by Seller prior to receipt of notice of such cancellation from Buyer plus Sellers usual rate of profit for the same or similar work

PAYMENTS

The customer will be invoiced per the payment schedule noted above.

LIMITED WARRANTY

(a.) Without limiting any other provision set forth herein, any and all product warranties will be limited to those available to Customer from the OEM (original equipment manufacturer) only. OEM warranties are contingent upon proper use of the products in the applications for which they were intended and shall not apply to products that are materially modified or subjected to unusual physical or electrical stress, misuse, abuse, or unauthorized repair. Customer is solely responsible for its machine's compliance with applicable regulations for machine guarding and safe operating practices. Unless otherwise noted, regulatory compliance of the system is the responsibility of the Customer. All software products are fully warranted for content, but operationally are provided "as is" and "with all faults", and the Company makes no warranty that the operation of software products will be uninterrupted or error-free.

(b.) Without limiting any other provision in this Agreement, and subject to the above Limitation of Liability paragraph, the Company warrants that it will perform the services specified in the section entitled "Scope of Work" in a quality and workmanlike manner; provided, however, that the foregoing sentence is not intended to, and does not, (i) warrant the performance of the system or other assembled products in a manner other than as specifically set forth in the performance specifications stated in the section entitled "Scope of Work" or (ii) warrant any product other than as expressly set forth in the preceding paragraph.

SOLICITATION OF PERSONNEL OR EMPLOYEES:

Customer agrees that during the term of this Agreement and for a period of 12 months after the expiration or termination date of this Agreement, it will not, without prior written consent of the Company solicit, hire, contract with, nor engage the services of, any employee of the Company with whom Customer has worked directly in conjunction with performance of services.

DELIVERY

The Company shall not be liable for delays or non-performance caused, directly or indirectly, by invasion, insurrection, riot, war, military or usurped power or by order of any civil or military authority, or by fire, flood, strike or labor difficulty, or by any other cause, whether of the same or different nature.

Unless otherwise specified, deliveries quoted are figured from the date of receipt of complete technical data and approved drawings. Unless otherwise specified equipment will be boxed or crated at our discretion for its protection against normal handling. Provisions for preservation, water-proofing, etc., are special and extra.

GENERAL

Advanced Technologies Consultants
www.atctrain.com

ROOTS Education Co.
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