

# Certifications

## Pre-Engineering, Robotics and Robotics in Manufacturing Fundamentals

The REC Foundation provides three industry certifications (Pre-Engineering, Robotics, and RMF) for schools, students in engineering related programs, and robotics clubs. These certifications were designed by a team of accomplished professionals composed of engineers, college professors, and high school teachers.

Presented by:

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ROBOTICS EDUCATION &  
COMPETITION FOUNDATION

**SUMMIT**

| VEX ROBOTICS PROGRAMS |



# Mission & Vision



## Mission

The Robotics Education & Competition Foundation's global mission is to provide every educator with competition, education, and workforce readiness programs to increase student engagement in science, technology, engineering, math, and computer science.



## Vision

We see a future where every student designs and innovates as part of a team, overcomes failure, perseveres, and emerges confident in their ability to meet global challenges.



**Inspiring students,  
one robot at a time.**



# About the RECF Certification Program

The RECF Certifications Program responds to a global need for more students in the Science, Technology, Engineering, and Mathematics (STEM) fields.



Along with a team of professional engineers, college professors, and high school teachers, the RECF created two industry certifications for students in engineering or robotics-related programs.

[Read More](#)

# Certification Accountability

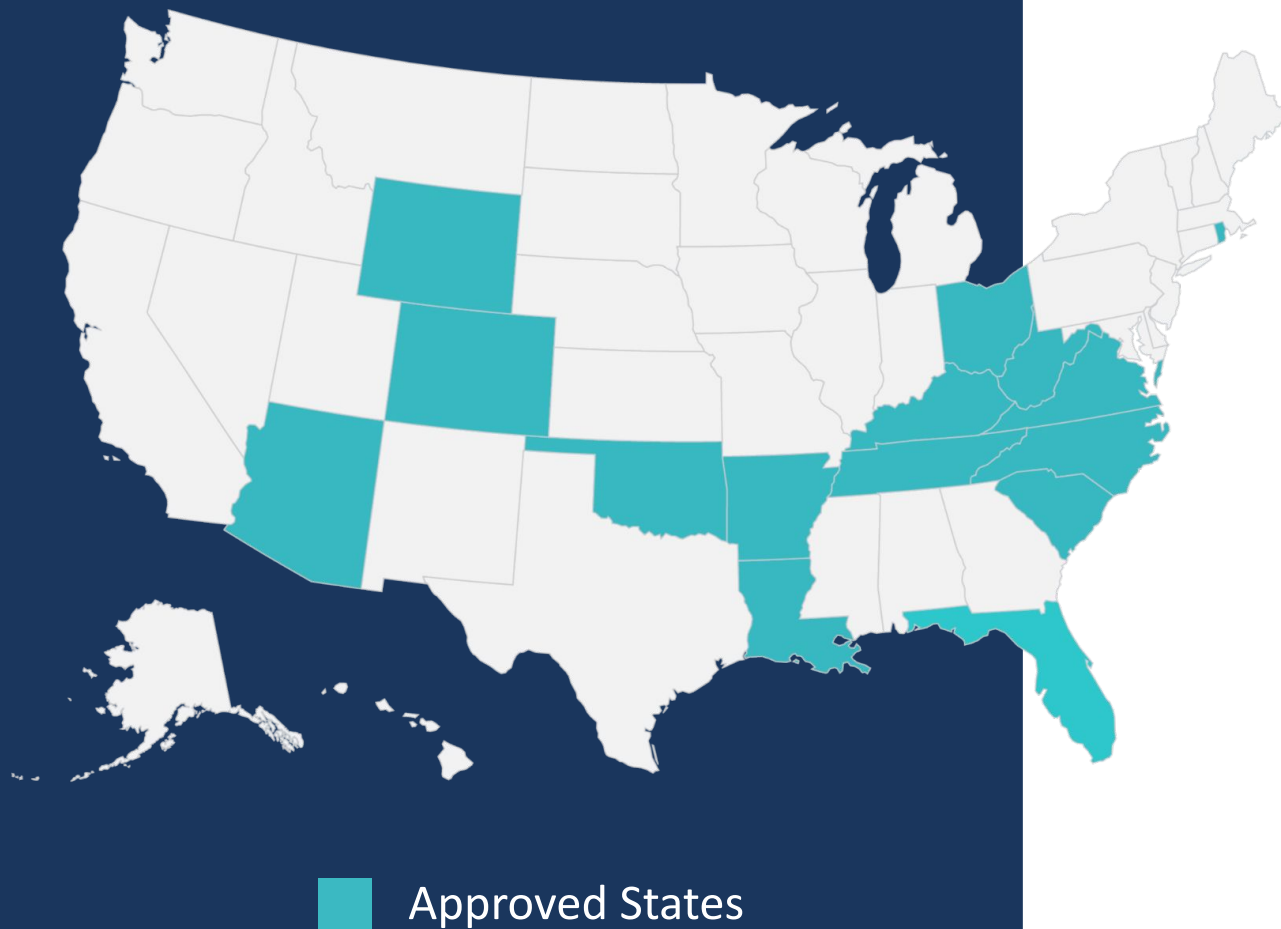
## Periodic Review for Testing Accuracy

Testing Requirements based on student performance

- Testing Content updated in Knowledge and Occupational Skills document
- Industry Alignment with field-based corporations.

Forward all Department of Education (DOE) requests and Inquiries to [certifications@recf.org](mailto:certifications@recf.org)





# Certification Accountability

## Application and Renewals

- The State Department of Education (DOE) dictates the frequency of renewal of certifications.
- Approved in Arizona, Arkansas, Colorado, Florida, Kentucky, Louisiana, North Carolina, Ohio, Oklahoma, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, and Wyoming.

# Industry Certification Benefits

The RECF Certifications Program is a response to a global need for more students in the Science, Technology, Engineering, and Mathematics (STEM) fields.

[Read More](#)



## Workforce Development

Prepare Students for Industry before they graduate high school



## Post-Secondary Preparation

Students arrive certified with a foundational level of knowledge



## CTE Instruction Validation

Used as the end-of-course assessment for engineering, technology, and robotics classes



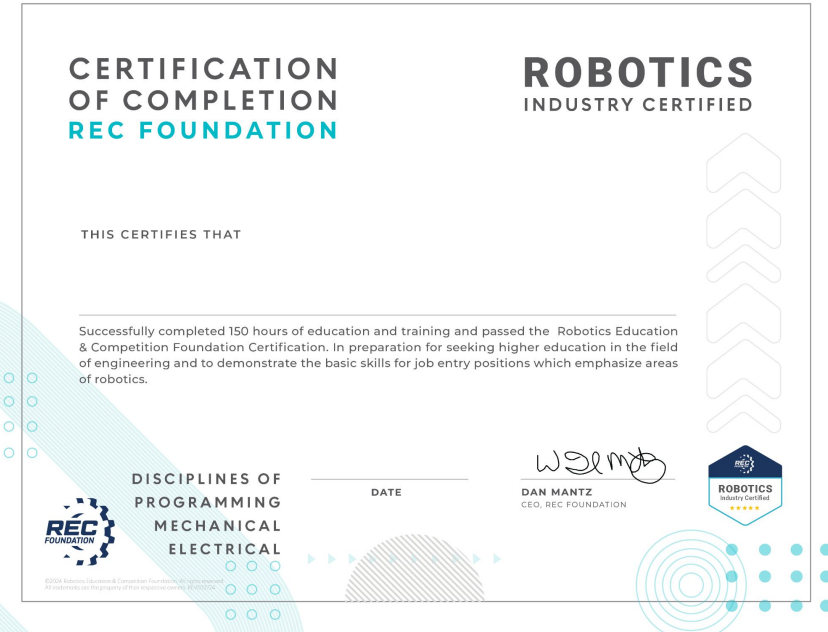


# Industry Certification Benefits

## Certifications = Opportunities

Many States provide funding for student-earned Industry Certifications.

Industry internships and Post-Secondary schools give favorable weighting to students with REC Foundation Certifications.



- > Perkins Funds
- > Career Development Funds
- > Industry recruitment
- > Students may earn college credits or course credits



A group of four students are sitting on a dark, patterned carpeted floor in a dimly lit room, likely a museum or workshop. They are focused on a small, custom-built robot with two large wheels and a sensor array. The robot is constructed from various electronic components, including a microcontroller, sensors, and a battery pack. One student, a young woman with long dark hair and glasses, is holding a small component. Another student, a young man with curly hair, is looking at the robot. A third student, a young woman with long dark hair, is looking at the robot. A fourth student, a young woman with long braids, is looking at the robot. The background is dark with some faint lights. The text 'Certification Pathway' is overlaid in the center in a large, white, sans-serif font.

# Certification Pathway



# Pathway to Certifications

Certifications are divided into a Fundamentals of Engineering section and eight engineering area modules.

Note: Modules are available after passing Fundamentals of Engineering.

## Modules available after passing Fundamentals of Engineering

|   |  |
|---|--|
| 1 | Manufacturing Technology                       |
| 2 | Engineering Technology                         |
| 3 | Mechanical                                     |
| 4 | Electrical                                     |
| 5 | Computer Science and Engineering (Programming) |
| 6 | Chemical                                       |
| 7 | Aerospace                                      |
| 8 | Civil Engineering                              |



# Pathway to Pre-Engineering

## Fundamentals of Engineering Test

- Requires 70% or higher to pass.
- 90 minute exam
- Approximately 100 questions

## Plus TWO User-selected Module Tests

- Requires 70% or higher to pass
- 30 minute exam
- Approximately 25 to 30 questions

“I’ve never seen a job being done by a five-hundred-person engineering team that couldn’t be done better by fifty people.”

- **C. Gordon Bell**



# Pathway to Robotics

## Fundamentals of Engineering Test

- Requires 70% or higher to pass.
- 90-minute exam
- Approximately 100 questions

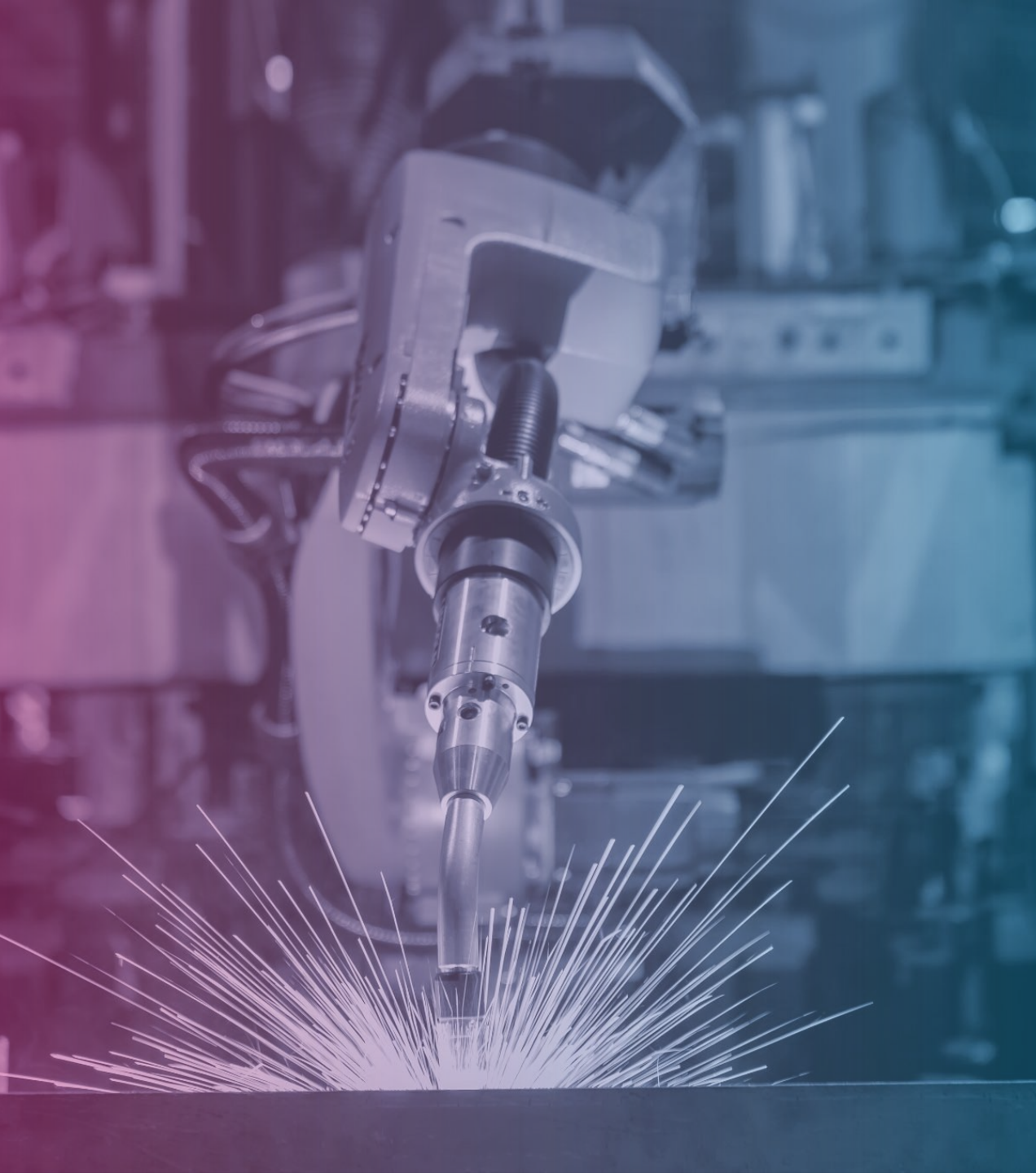
## Plus THREE Specific Module Tests -

### (Mechanical, Electrical and Programming)

- Requires 70% or higher to pass
- 30 minute exam
- Approximately 25 to 30 questions

“Don’t let anyone rob you of your imagination, your creativity, or your curiosity. It’s your place in the world; it’s your life. Go on and do all you can with it, and make it the life you want to live.” - **Mae Jemison**



A close-up photograph of a robotic welding arm in a factory setting. The arm is positioned vertically, and a bright, starburst-like spray of sparks is emanating from the welding point at the bottom. The background is blurred, showing other industrial equipment. The image has a blue and purple color overlay.

# Pathway to Robotics in Manufacturing Fundamentals

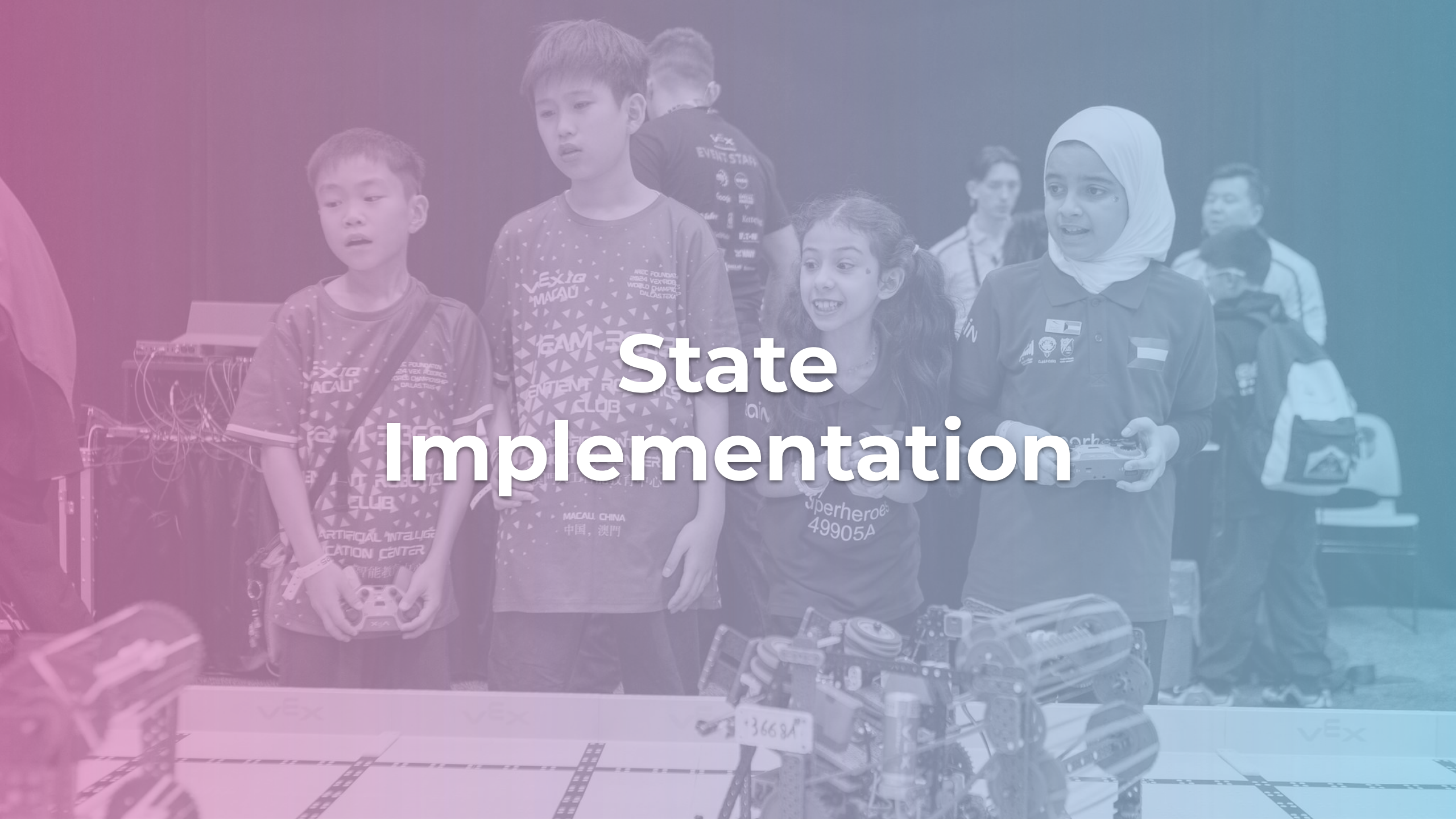
## Exam Requirements

- Requires 70% or higher to pass.
- 90-minute exam
- Approximately 100 questions

**More Information**





A background image of a VEX Robotics competition. In the foreground, a VEX robot is on a competition field. Behind it, four children are standing, looking at the robot. Two boys on the left are wearing 'VEX IQ MACAU' t-shirts. A girl in the center is wearing a 'Superhero 49905A' t-shirt. A girl on the right is wearing a dark polo shirt with a UAE flag and a white hijab. In the background, other people and a 'VEX EVENT STAFF' shirt are visible. The image has a red-to-blue gradient overlay.

# State Implementation

# Implementation Planning Phase

## Questions to Consider

1. Check requirements
2. Are you wanting to test
  - Single class with a single teacher?
  - Single school with multiple teachers?
  - Entire School District?
3. Who is leading the Administration? (voucher tracking, test results, reporting process)
4. Who will be the test Proctor? (Note: Teachers/Coaches may not proctor their own students)
5. Do you want to test on the Pre-Engineering Certification, the Robotics Certification, or both?
6. How many students are testing? How many retakes are expected?  
This helps determine the number of vouchers needed.

## Requirements

- Approved Industry Certification with State DOE
- Testing follows State DOE Guidelines
- (Most states) Teacher has the same certification as is tested
- Proctor agreements and Non-Disclosure agreements signed





# Student Success Reteach & Retest

- **70% Passing Standard** on all tests
- Students may **retake an exam**
  - After waiting a minimum of 20 days (or longer if required by state DOE)
  - Up to 3 times in an academic year
- **Unused testing vouchers** do not expire, so a student can delay until the Knowledge and Occupational Skills are ready
- Vouchers are available for redemption **by any student**
- School Districts can cover the testing costs with Career Development Funds, pending approval and addition to the Louisiana Industry-Based Certification (IBC) State Focus List





# Final Note

## Accomodations

Some states allow for accommodations when taking Industry-Based Certifications

- Parent/Guardian completes the [Online Accommodations Request Form](#)
- The Accommodations Request Form is submitted and then reviewed by the RECF.
- Once approved, the accommodations are applied to the student's testing account and are valid for any test the student takes.
- Extra time - 50% or 100% extra time is provided via the approved accommodation.



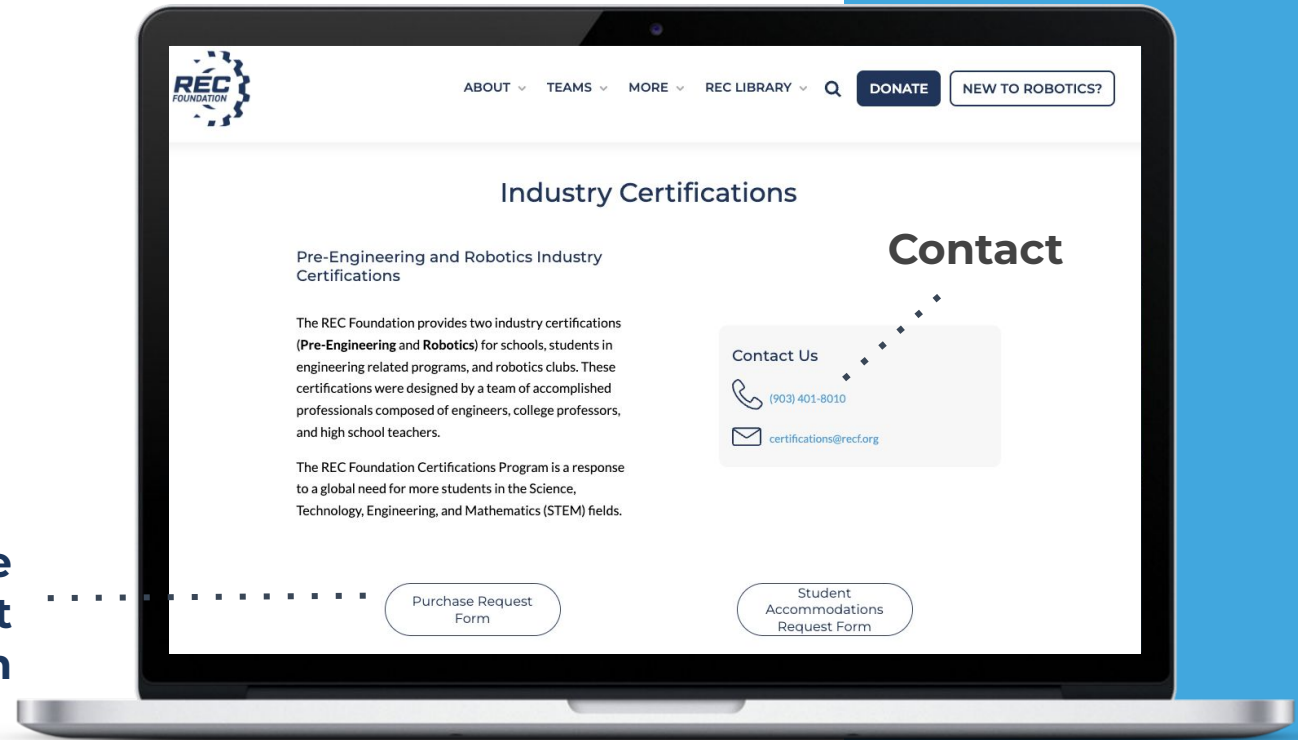
A background image showing a VEX Robotics competition. In the foreground, a VEX robot with the number 2775V is visible. In the background, three people are standing: a man in a grey t-shirt, a man in a white lab coat and hard hat, and a woman in a white lab coat. The image has a blue and purple color overlay.

**Find Out More**

# Industry Certifications Webpage

Certifications

Link to online  
purchase request  
order form



Testing process,  
resources, and  
additional info

### Modules

Certifications are divided into a Fundamentals of Engineering section and eight engineering area modules.

- Aerospace Pre-Engineering
- Chemical Pre-Engineering
- Civil Pre-Engineering
- Computer Science/Programming

- Electrical Pre-Engineering
- Engineering Technology
- Manufacturing Technology
- Mechanical Pre-Engineering

Additional Links

Knowledge & Occupational Skills

Eight industry modules

Suggested  
curriculum

|                        |      |       |         |         |         |          |
|------------------------|------|-------|---------|---------|---------|----------|
| <b>Pre-Engineering</b> | 1    | 10    | 25      | 50      | 100     | 200      |
| <b>Pricing</b>         | \$50 | \$500 | \$1,250 | \$2,500 | \$4,500 | \$9,000  |
| <b>Robotics</b>        | 1    | 10    | 25      | 50      | 100     | 200      |
| <b>Pricing</b>         | \$60 | \$600 | \$1,500 | \$3,000 | \$5,400 | \$10,800 |
| <b>RMF</b>             | 1    | 10    | 25      | 50      | 100     | 200      |
| <b>Pricing</b>         | \$55 | \$550 | \$1,375 | \$2,750 | \$5,500 | \$11,000 |

## Pre-Engineering

certification pricing

**1 unit \$50**

**10% Off Discount\***

- ✓ 2-99 units: \$50 each
- ✓ 100 units\* \$4,500.00
- ✓ 10% discount is off of
- ✓ the 100 units pricing

## Robotics

certification pricing

**1 unit \$60**

**10% Off Discount\***

- ✓ 2-99 units: \$60 each
- ✓ 100 units\* \$5,400.00
- ✓ 10% discount is off of the
- 100 units pricing

## RMF

certification pricing

**1 unit \$55**

**NO 10% Off Discount\***

- ✓ 2-99 units: \$55 each
- ✓ 100 units \$5,500.00



# Contact

## We are here for you

Please forward all Department of Education (DOE) requests and inquiries to the contact information below.

### Address

1519 Interstate 30 West  
Greenville, Texas 75402

### Phone & Email

903 401 8010  
[certifications@recf.org](mailto:certifications@recf.org)

### Resources



ROBOTICS EDUCATION &  
COMPETITION FOUNDATION

# SUMMIT

VEX ROBOTICS PROGRAMS