Middle School Career Exploration

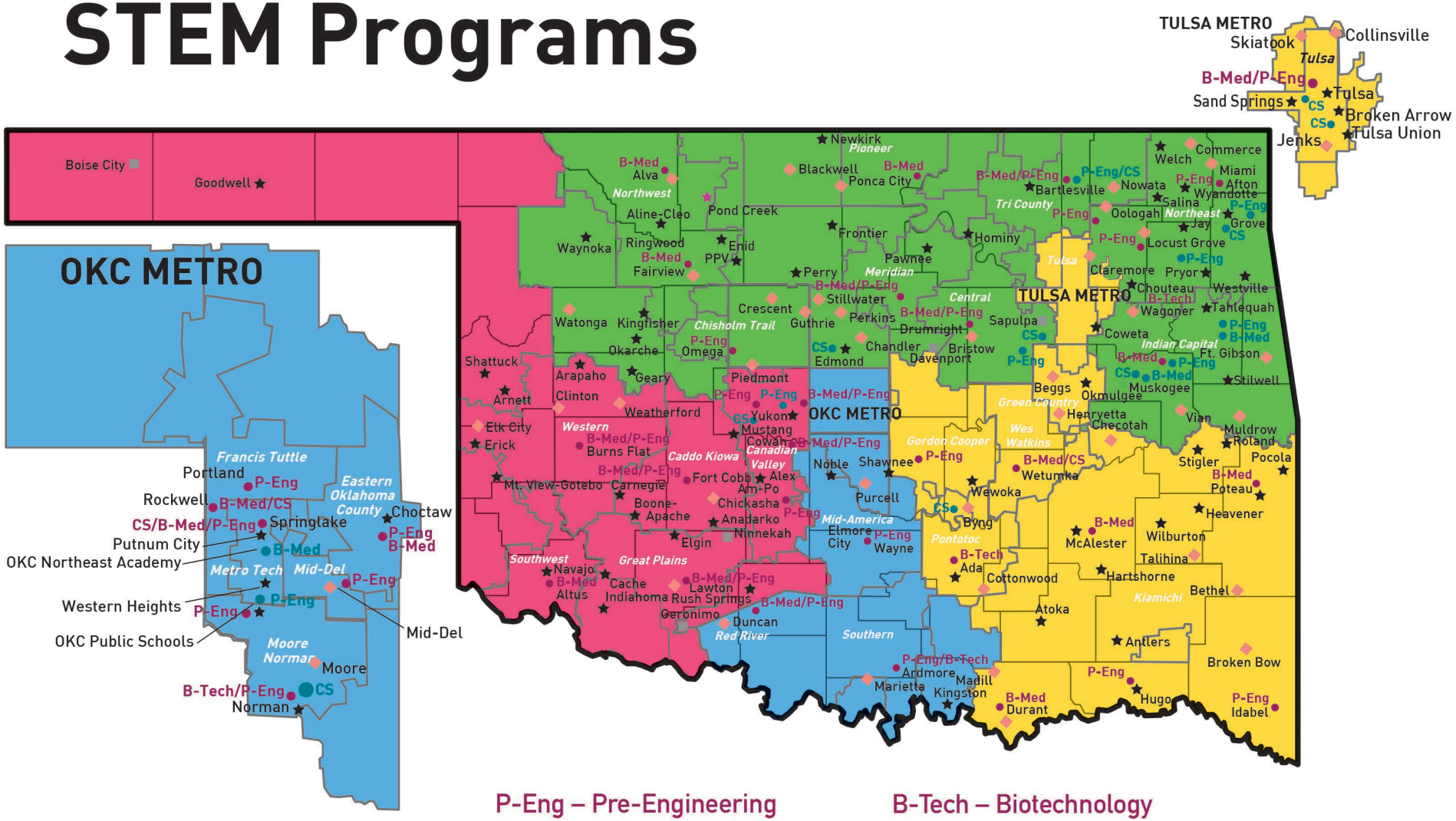
Kristye O'Mealey, Program Specialist

Tonja Norwood, Division Manager

https://oklahoma.gov/careertech/educators/stem.html

OKLAHOMA CareerTech

STEM Programs

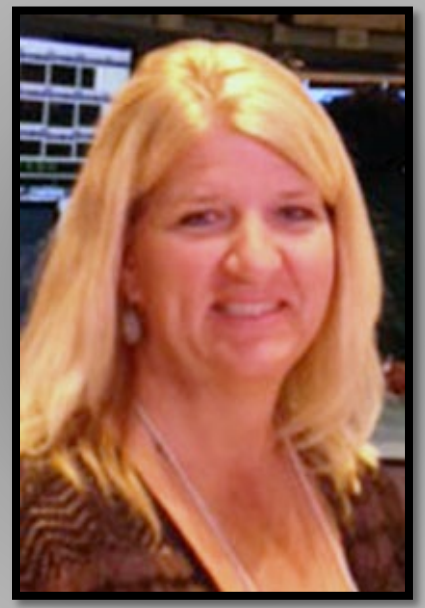


- Middle School Programs
- TC Programs Located at HS
- Technology Center (TC) Program
- High School Program
- ★ MS & HS Programs

P-Eng – Pre-Engineering
B-Med – Biomedical Sciences
B-Tech – Biotechnology
CS – Computer Science

Red Region 1 – Tami Redus
Green Region 2 – Nacoe Thomas
Blue Region 3 – Kristye O'Mealey
Gold Region 4 – Angela Teeman

OKLAHOMA CareerTech STEM Science, Technology, Engineering and Math



Tonja Norwood, STEM Manager

Karsyn Bradshaw, Admin Assistant

Angela Teeman, Tech Engineering, Science

Tami Redus, CS & TSA State Advisor

Kristye O'Mealey, SC, Aero, BioTech, BioMed

Nacoe Thomas, Math, Engineering, Gateway

Middle School

Engineering Exploration

Health Science Explorations

IT Exploration

Architecture & Construction Exploration

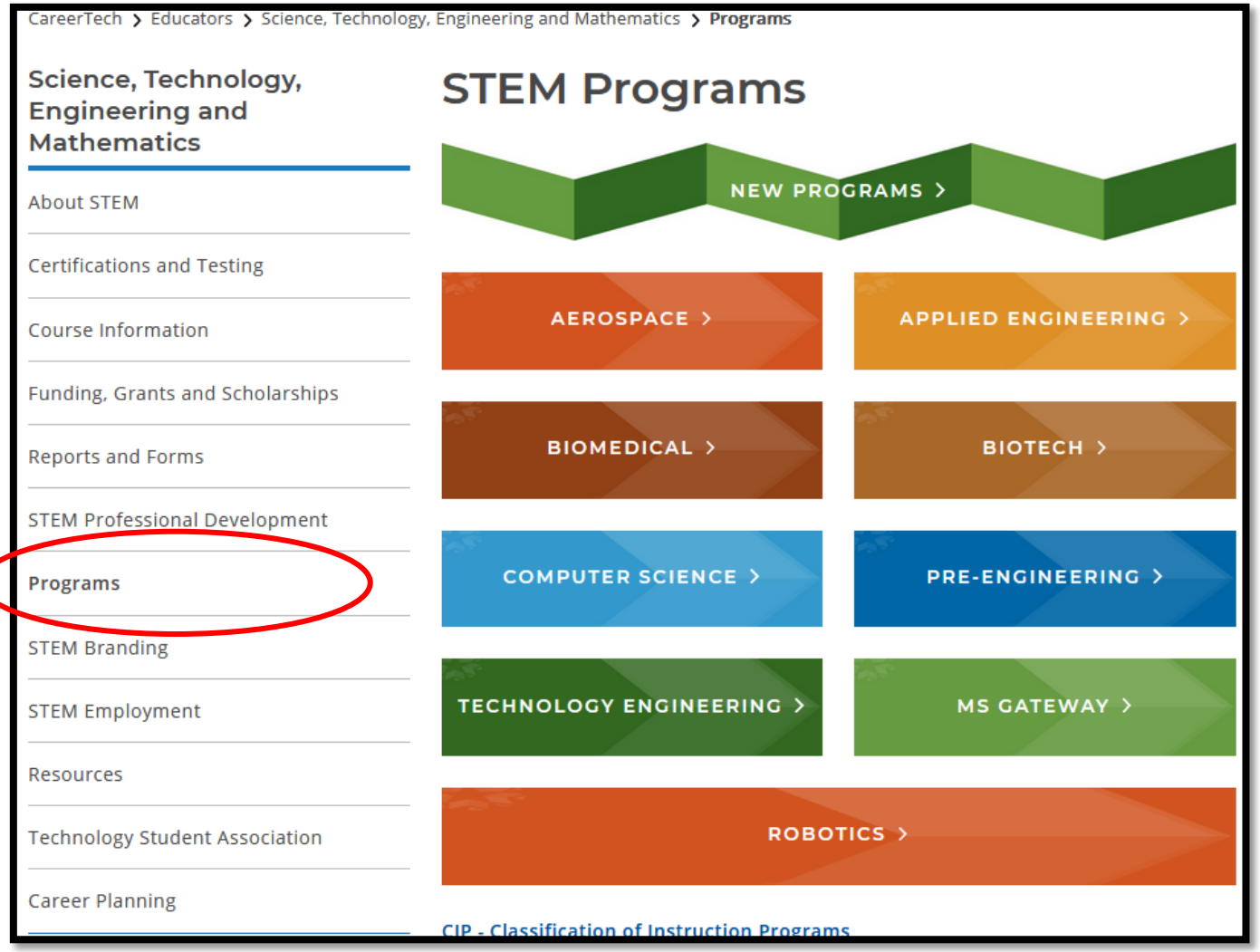
Arts, AV, and Communication Exploration

Natural Resources Exploration

Manufacturing Exploration

Transportation Exploration

OKLAHOMA CareerTech | STEM Science, Technology, Engineering & Mathematics



OKLAHOMA CareerTech
STEM Science, Technology, Engineering and Mathematics TSA - Technology Student Association

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STEM Science, Technology, Engineering and Mathematics TSA - Technology Student Association

https://oklahoma.gov/careertech/educators/stem/about.html

CareerTech › Educators › Science, Technology, Engineering and Mathematics › Programs

Science, Technology, Engineering and Mathematics

- About STEM
- Calendar of Events
- Career Planning
- Certifications and Testing
- Course Information
- Funding
- Reports and Forms
- STEM Branding
- STEM Professional Development
- Programs
- STEM Employment
- Resources

Technology Engineering

This program is designed for middle and high school students to explore all cluster areas AND the careers available within them. They will apply basic knowledge gained from various projects and activities to the appropriate cluster area. They will learn teamwork, problem solving, design process, and technology literacy. Students will also gain hands-on experience in using technology in activity-based courses.

Course Description Guide

Curriculum Resources

- TeachEngineering
- Vex

TSA

- Competitive Events
- Advisor Resources
- Officer ToolKit

Additional Resources

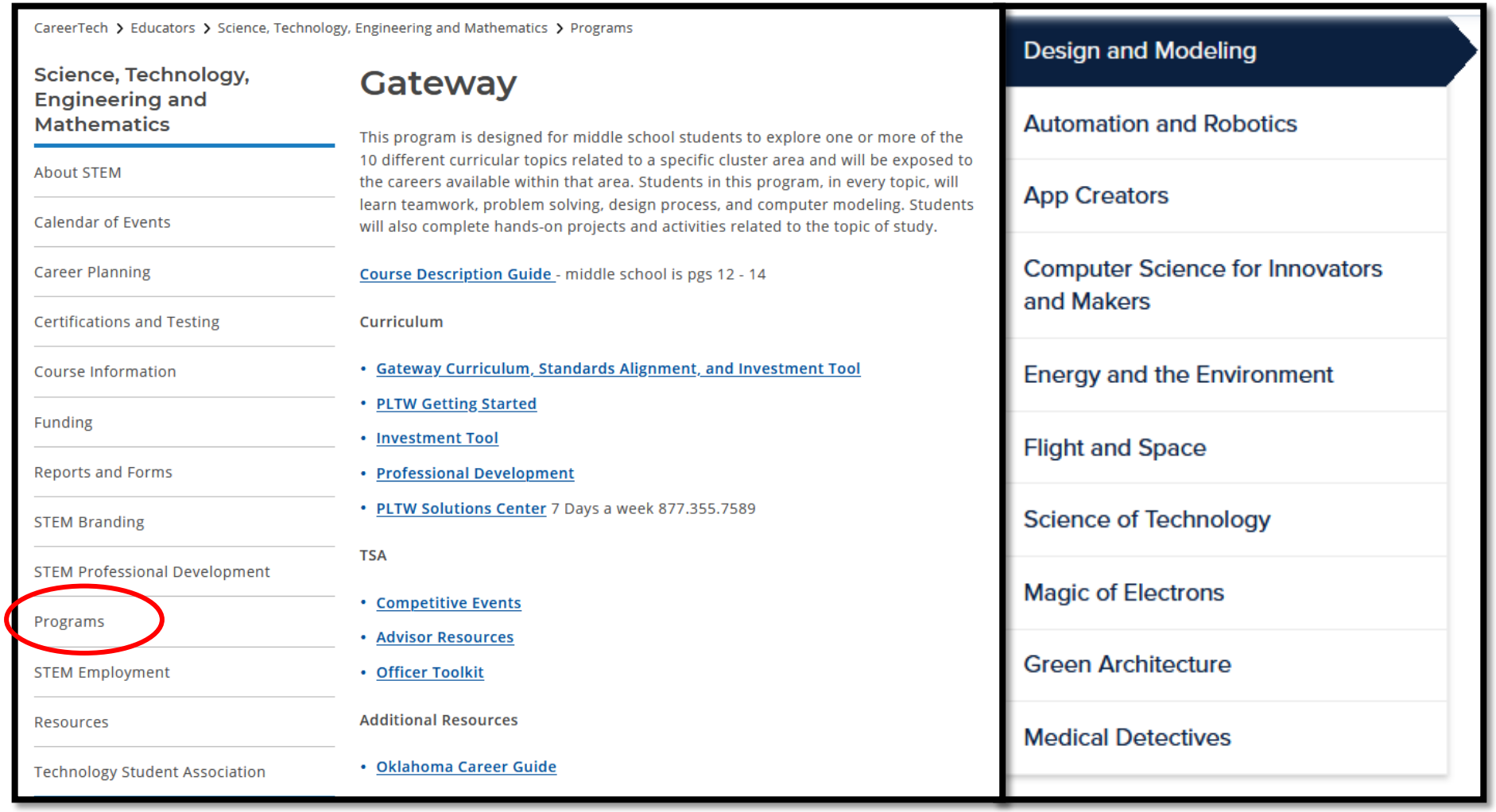
- NGSS Engineering Standards
- Oklahoma Career Guide

Contact: Kristye O'Mealey 405.743.5139 or Kristye.Omealey@careertech.ok.gov

https://oklahoma.gov/careertech/educators/stem/programs/middle-school-technology-engineering.html

OKLAHOMA CareerTech STEM Science, Technology, Engineering and Math

PLTW Gateway



CareerTech › Educators › Science, Technology, Engineering and Mathematics › Programs

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Gateway

This program is designed for middle school students to explore one or more of the 10 different curricular topics related to a specific cluster area and will be exposed to the careers available within that area. Students in this program, in every topic, will learn teamwork, problem solving, design process, and computer modeling. Students will also complete hands-on projects and activities related to the topic of study.

Course Description Guide - middle school is pgs 12 - 14

Curriculum

- Gateway Curriculum, Standards Alignment, and Investment Tool
- PLTW Getting Started
- Investment Tool
- Professional Development
- PLTW Solutions Center 7 Days a week 877.355.7589

TSA

- Competitive Events
- Advisor Resources
- Officer Toolkit

Additional Resources

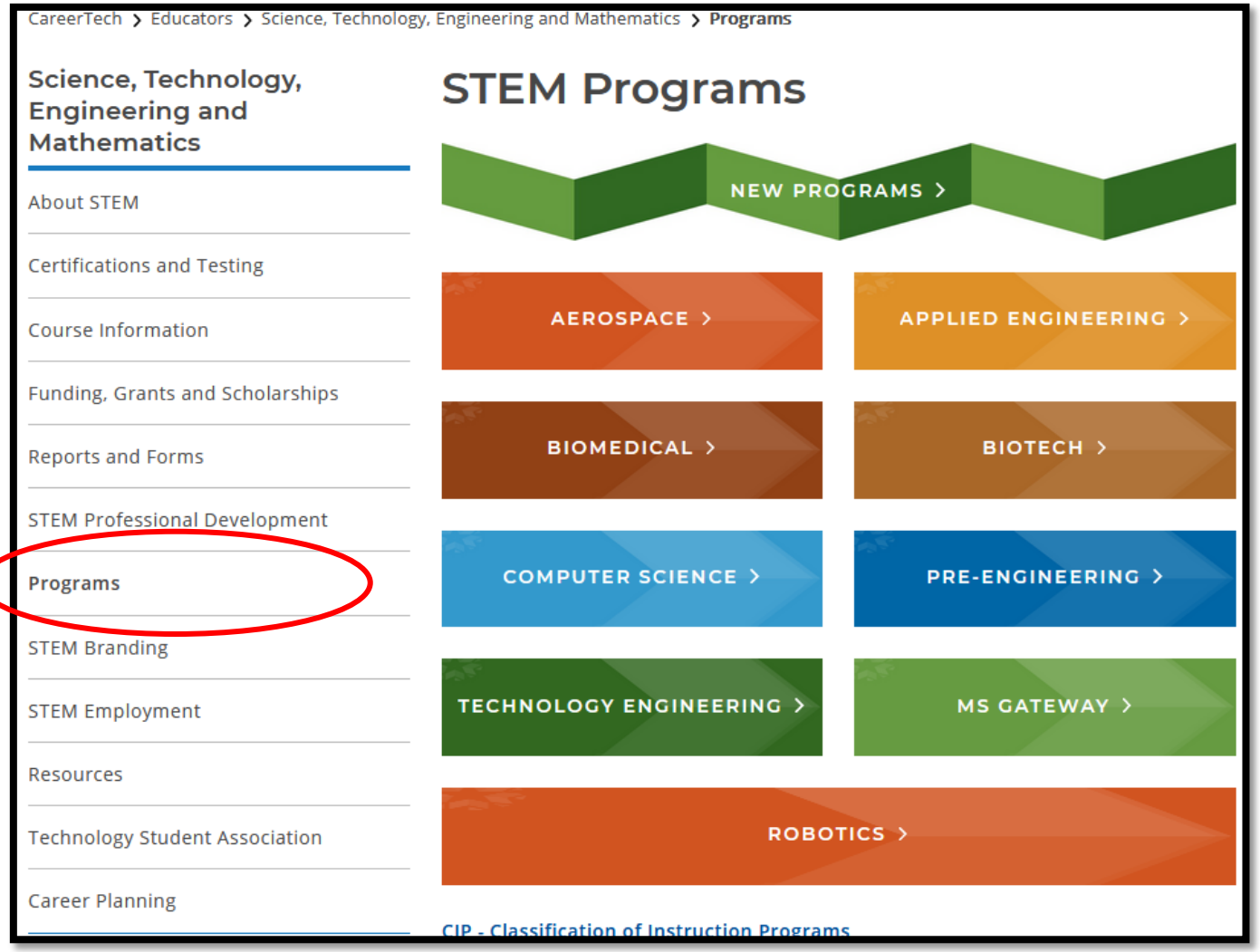
- Oklahoma Career Guide

Design and Modeling

- Automation and Robotics
- App Creators
- Computer Science for Innovators and Makers
- Energy and the Environment
- Flight and Space
- Science of Technology
- Magic of Electrons
- Green Architecture
- Medical Detectives

https://oklahoma.gov/careertech/educators/stem/programs/gateway.html

OKLAHOMA CareerTech STEM Science, Technology, Engineering and Math



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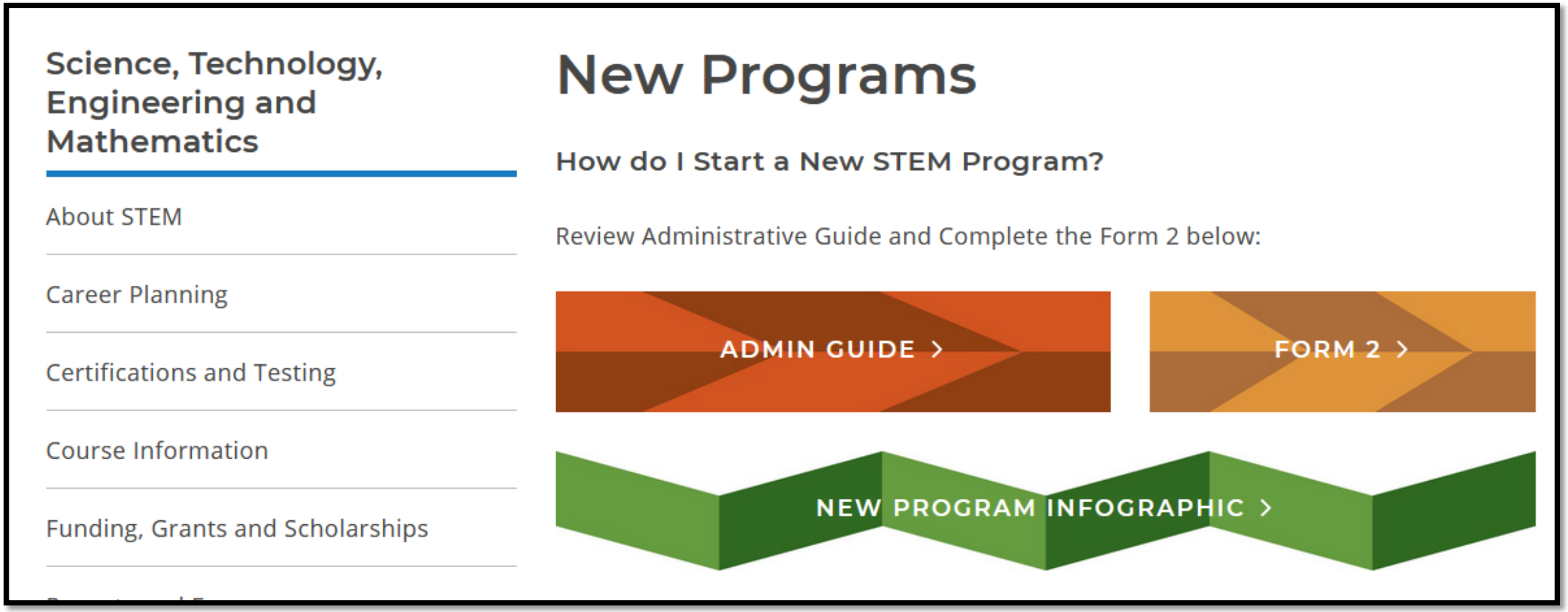

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Course Descriptions Guide

Middle School Courses

CESI Pathway: SC000 Science, Technology, Engineering and Mathematics Exploratory

8971 Architecture & Construction Exploration – ¼ to 1 unit **(CESI: ST00292)**
Exploring *Careers* in designing, planning, managing, building and maintaining the built environment.

8971 Green Architecture (Gateway) – ¼ to 1 unit **(CESI: ST00139)**
In this course, students learn how to apply green concepts to the fields of architecture and construction. They explor dimensioning, measuring, and architectural sustainability and apply what they have learned to design affordable housing units using 3D architectural design software. This course is designed for 6th – 8th grade students.

8972 Arts, A/V Technology & Communications Exploration – ¼ to 1 unit (CESI: 00293)

8830 Engineering Exploration – ¼ to 1 unit **(CESI: ST00289)**
Exploring a future in the Engineering and Technology pathway, students should study and apply principles from advanced mathematics life sciences physical science, earth and space science, and technology.

8830 Automation and Robotics Exploration (Gateway) – ¼ to 1 unit **(CESI: ST00088)**
Students learn about the history and impact of automation and robotics as they explore mechanical systems, energy transfer, machine automation, and computer control systems. Using the VEX Robotics® platform, students apply wha they know to design and program a variety of objects.

8830 Design and Modeling Exploration (Gateway) – ¼ to 1 unit **(CESI: ST00085)**
Students discover the design process and develop an understanding of the influence of creativity and innovation in their lives. They are then challenged and empowered to use and apply what they've learned throughout the course t design unique products.

8830 Gateway Exploration – ¼ to 1 unit **(CESI: ST00276)**
Students experience different units in different Gateway courses during the course.

8830 Magic of Electrons Exploration (Gateway) – ¼ to 1 unit **(CESI: ST00086)**
Students examine the behavior and parts of atoms as well as the impact of electricity on the world around them. The learn skills in basic circuitry design and use what they know to propose designs such as an alarm system.

DRAFT

Science, Technology, Engineering and Math Core Courses Grade 6 – 8		Pathway: SC000 STEM Exploratory
OCAS	Course Titles	CESI Course Codes
8830	Engineering Exploration	ST00289 or Choose One Below
8830	Automation and Robotics (Gateway)	ST00088
8830	Design and Modeling (Gateway)	ST00085
8830	Gateway Exploration	ST00276
8830	Magic of Electrons (Gateway)	ST00086
8830	STEM Career Exploration	ST00288
8830	Tech Engineering Exploration I	ST00230 (Year), ST00229 (Semester), ST00228 (9 Week)
8830	Tech Engineering Exploration II	ST00236 (Year), ST00235 (Semester), ST00234 (9 Week)
8830	Tech Engineering Exploration III	ST00242 (Year), ST00241 (Semester), ST00240 (9 Week)
8835	Health Science Exploration	ST00286 Choose one below
8835	Medical Detectives Ex. (Gateway)	ST00090
8835	Tech Engineering Exploration I	ST00230 (Year), ST00229 (Semester), ST00228 (9 Week)
8835	Tech Engineering Exploration II	ST00236 (Year), ST00235 (Semester), ST00234 (9 Week)
8835	Tech Engineering Exploration III	ST00242 (Year), ST00241 (Semester), ST00240 (9 Week)
8838	Information Technology Exploration	ST00287 or Choose One Below
8838	App Creator Ex. (Gateway)	ST00091
8838	CS for Innovators and Makers Exploration (Gateway)	ST00095
8838	Computer Science Exploration	ST00096
8838	Science of Technology Ex. (Gateway)	ST00087
8867	Computer Science Discoveries (Middle/High School)	ST00256
8971	Architecture & Construction Exploration	ST00292 or choose one below:
8971	Green Architecture Ex. (Gateway)	ST00139
8971	Tech Engineering Exploration I	ST00230 (Year), ST00229 (Semester), ST00228 (9 Week)
8971	Tech Engineering Exploration II	ST00236 (Year), ST00235 (Semester), ST00234 (9 Week)
8971	Tech Engineering Exploration III	ST00242 (Year), ST00241 (Semester), ST00240 (9 Week)
8972	Arts, A/V Technology & Communication Exploration	ST00293 or choose one below:
8972	Tech Engineering Exploration I	ST00230 (Year), ST00229 (Semester), ST00228 (9 Week)
8972	Tech Engineering Exploration II	ST00236 (Year), ST00235 (Semester), ST00234 (9 Week)
8972	Tech Engineering Exploration III	ST00242 (Year), ST00241 (Semester), ST00240 (9 Week)

OKLAHOMA CareerTech STEM Science, Technology, Engineering and Math

Science, Technology, Engineering and Mathematics

- About STEM
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- Resources
- Technology Student Association
- Career Planning

Science, Technology, Engineering and Mathematics (STEM)

OKLAHOMA CareerTech | STEM Science, Technology, Engineering & Mathematics

STEM FAQ'S	STEM RESOURCES	CAREER PLANNING
Contact Us	Important Dates	WBL Toolkits
New Program	Job Openings	POS - Tech Center
New Teacher Academy	K12 Evaluations	POS- College
Oklahoma Summit	Testing	Fee Waivers at TC
OEIP	STEM Logos	Express Partnership
Teacher Certification		

Interactive Data

STATE PROGRAMS	K - 12 PROGRAMS	FAST FACTS

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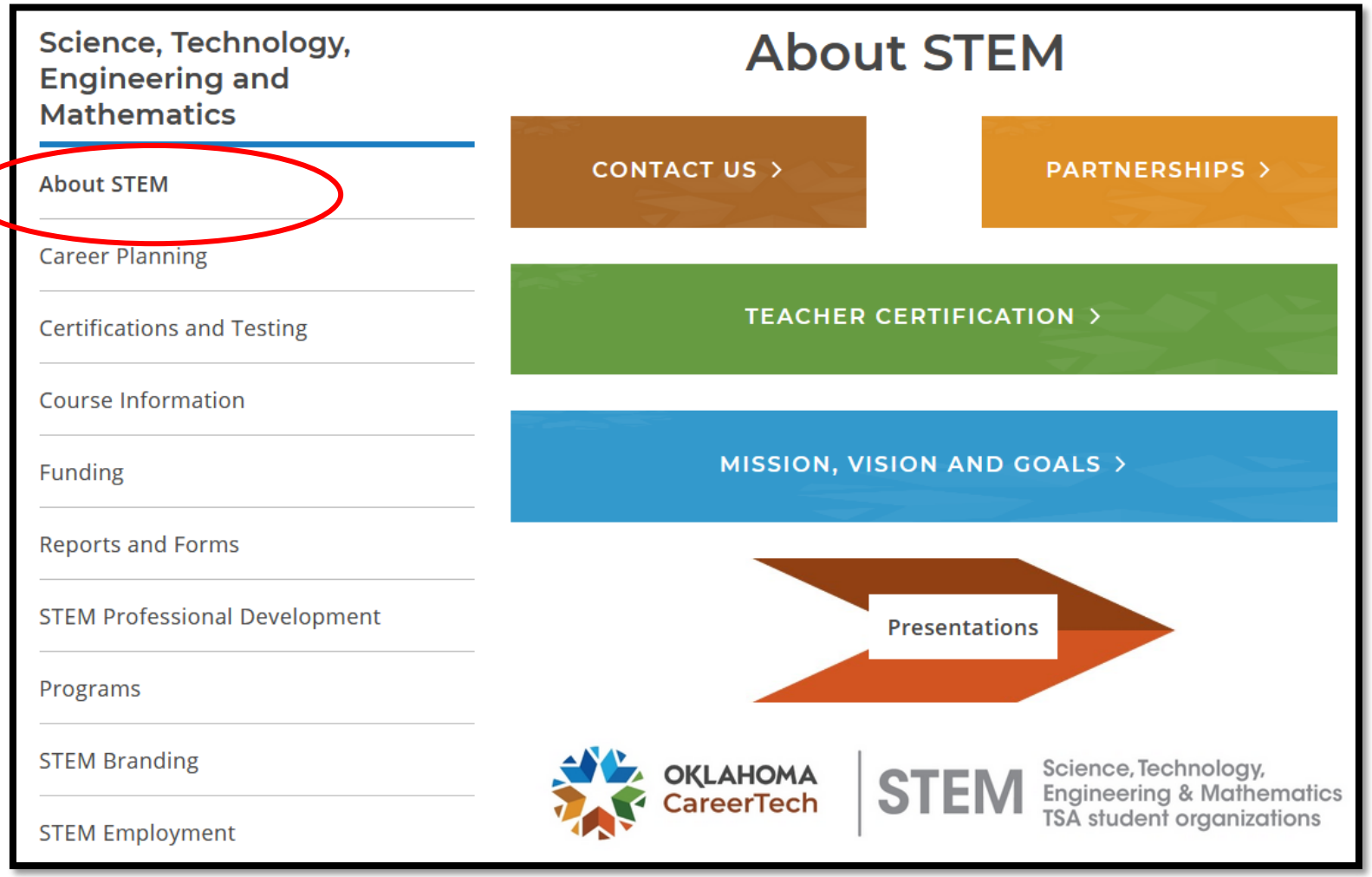

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STEM Science, Technology, Engineering and Mathematics TSA - Technology Student Association

https://oklahoma.gov/careertech/educators/stem/funding.html

Program Funds

- Yearly
  - Program Assistance (412)
  - Teacher Supplement (411)

OKLAHOMA CareerTech STEM Science, Technology, Engineering and Math

Lottery Grants

Describe Your Program

- $15,000

Technology Aligns to Classroom Goals

Why Requesting and How it will Impact

Measurement & Budget

Innovative Grants

High Growth

- $50,000/year $100,000

Career Development

- $50,000/year or $100,000

Career Pathways, Workforce and Industry Partnership

- $50,000, $25,000 or $75,000

Innovation in Career Exploration (MS)

- $50,000/year or $100,000

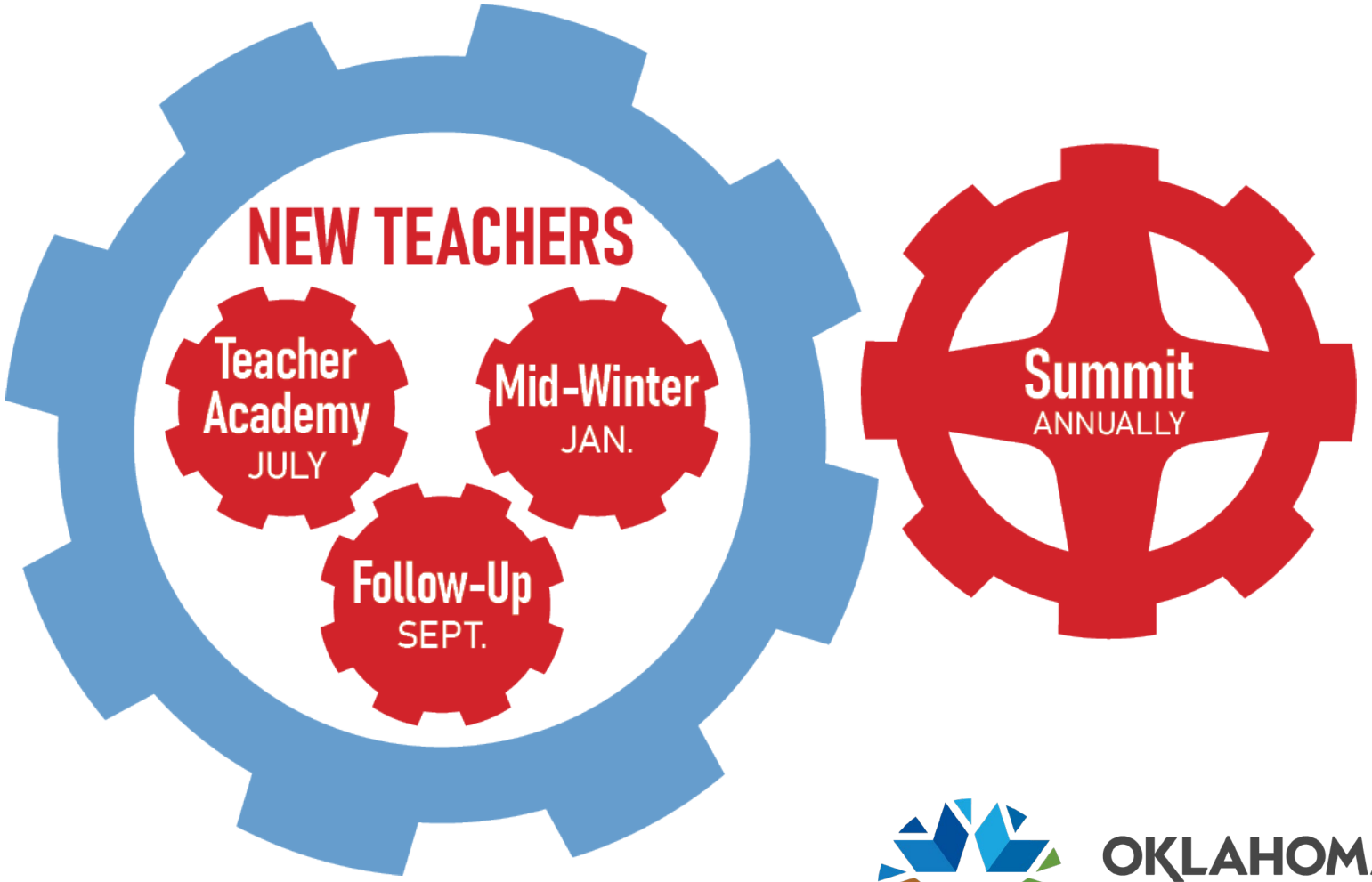
Program Requirements

- Professional Development
- STEM Courses
- Advisory Committee
- Reports
- TSA

OKLAHOMA CareerTech STEM Science, Technology, Engineering and Math

https://oklahoma.gov/careertech/educators/stem/course-information.html

Professional Development



OKLAHOMA CareerTech

STEM Science, Technology, Engineering and Mathematics
TSA - Technology Student Association

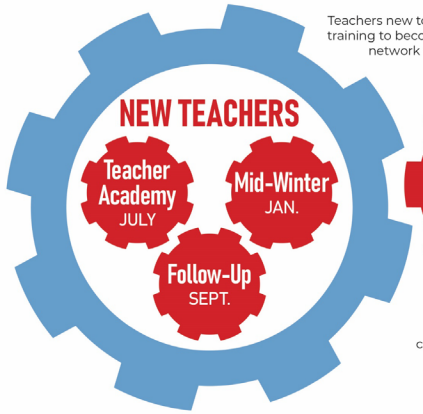
OKLAHOMA CareerTech

STEM Science, Technology, Engineering & Mathematics TSA student organization

Program Requirements

PROFESSIONAL DEVELOPMENT

Teachers new to CareerTech attend new teacher training to become familiar with CareerTech and network with other STEM teachers.



CareerTech teachers annually attend Oklahoma Summit, a collaborative conference planned by OkACTE and CareerTech.

STEM COURSES

CareerTech STEM programs teach STEM-approved courses and schools report all courses using 8000 level codes.

CAREERTECH STUDENT ORGANIZATIONS

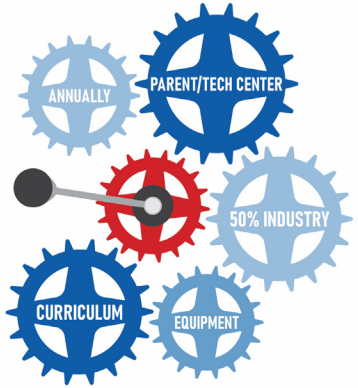
All CareerTech teachers must have an active CareerTech Student Organization. TSA is the student organization that aligns to STEM.

REPORTS

- **412 funding** *STEM 315*
- **Salary and schedule** *September*
- **CESI** *Student enrollment, October*
- **Student completion** *Seniors follow-up, November*
- **OCAS codes** *8000*
- **CTIMS** *https://ctims.okcareertech.org/CTBDSWeb/*

FUNDING

- **STEM Program 412 annual funding** *Equipment, supplies, professional development*
- **STEM Teacher 411 annual stipend**
- **Lottery grants** *Receive every other year*
- **Innovative grants** *Opens every two years*



ADVISORY COMMITTEE

CareerTech Programs must hold at least one advisory committee meeting each year. The committee should help with curriculum and equipment decisions.

OKLAHOMA CareerTech

STEM Science, Technology, Engineering and Mathematics TSA - Technology Student Association

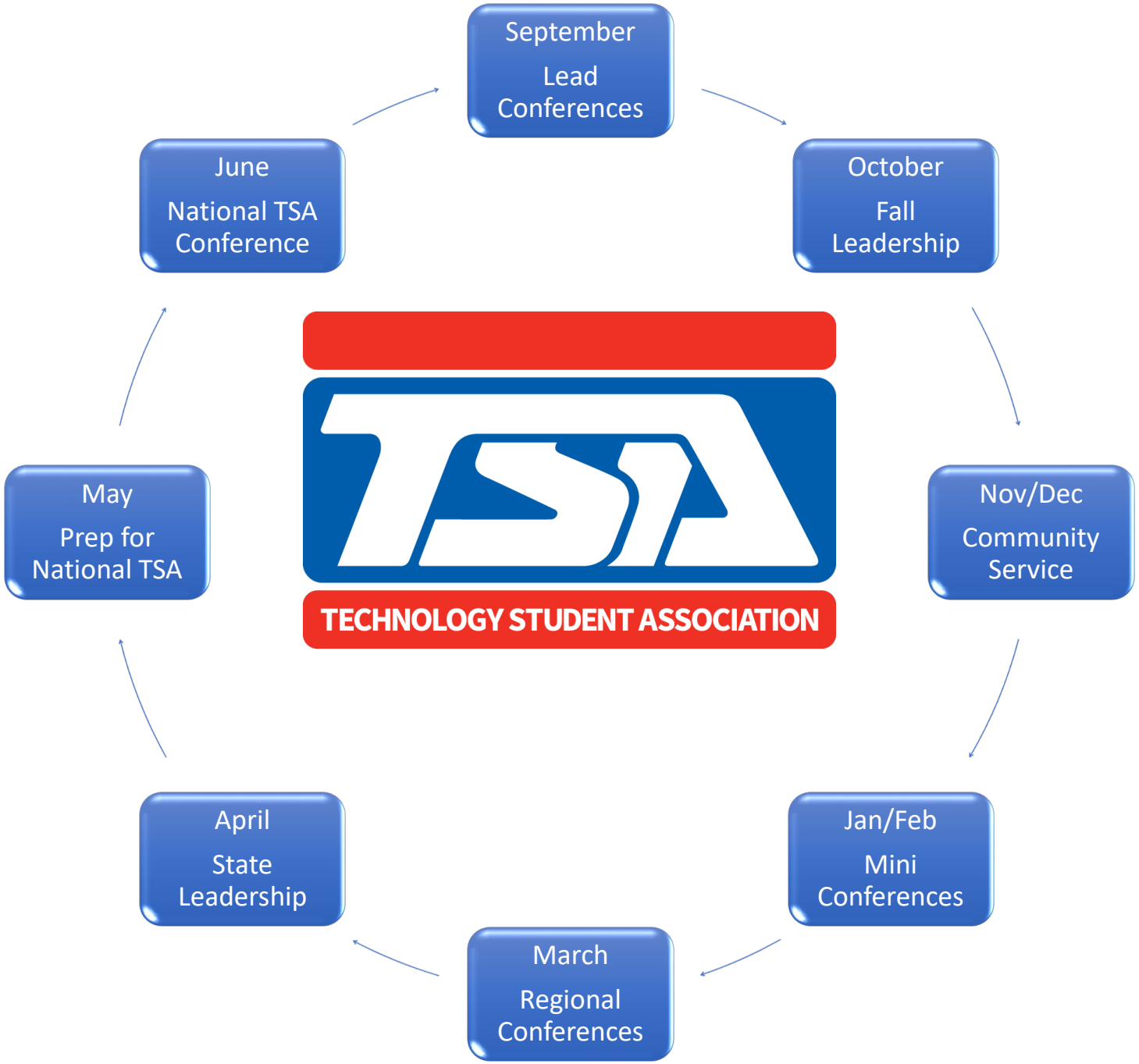
OKLAHOMA CareerTech

STEM Science, Technology, Engineering and Mathematics TSA - Technology Student Association

https://oklahoma.gov/careertech/educators/stem/funding-grants-and-scholarships/new-programs.html

Technology Student Association (TSA)

> Student Lead



September	**TSA LEAD Conference** **TSA Kickoff**
October	**TSA Fall Leadership**
November/December	**Community Service**
January/February	**TSA Mini Conference** **CTSO Month**
March	**TEAMS Challenge** **TSA Regional**
April	**State Leadership**
May	**Prep for Nationals**
June	**National Conference**

OKLAHOMA CareerTech

STEM Science, Technology, Engineering and Mathematics
TSA - Technology Student Association

OKLAHOMA

TSA

TECHNOLOGY STUDENT ASSOCIATION

GEAR UP FOR YOUR FUTURE

Middle School Events and Careers

ARCHITECTURE AND CONSTRUCTION TECHNOLOGY

Construction Challenge
Community Planner
Product Designer

Off the Grid
Architect
Interior Designer

Project Fair
Woodworker
Product Designer

Structural Engineering
CMI Engineer
Engineering Technician

COMMUNICATIONS TECHNOLOGY

Challenging Technology Issues
Lobbyist
Management Executive

Prepared Speech
Motivational Speaker
Politician

Promotional Marketing
Public Affairs Specialist
Ad Copywriter

Children's Stories
Graphic Artist
Publisher

Essays on Technology
Economist
Technical Writer

S

TECHNOLOGY AND RESEARCH

Biotechnology
Plant Geneticist
Molecular Biologist

System Control Technology
Robotics Engineer
CNC Programmer

Medical Technology
Dietitian
Pharmacist

Forensic Technology
Crime Scene Investigator
Forensic Pathologist

T

STEM (GENERAL)

CAD Foundations
Machine Designer
CAD Professional

Electrical Applications
Research Assistant
Electrical Technician

Inventions and Innovations
Multimedia Designer
Engineer

Problem-Solving
Detective
Nurse

Video Game Design
Animator
Electronic Game Technician

Technical Design
Creative Consultant
Quality Assurance

Rube Goldberg*
Systems Analyst
Designer

E

LEADERSHIP

Leadership Strategies
Human Resource Specialist
Lawyer

Chapter Team
Politician
Judge

Community Service Video
Videographer
Audiovisual Technician

Career Prep
Public Speaker
All Careers

Tech Bowl
Educator
Engineer

M

STEM AND THE ARTS

Digital Photography
Photojournalist
Reporter

STEM Animation
Computer Animator
Game Designer

Comic Book Design*
Graphic Artist
Illustrator

T-Shirt Design and Pin Design*
Graphic Artist
Designer

COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

Cybersecurity
Cybercrime Investigator
Cryptographer

Foundations of IT
Network Systems
Programming and Software Developer

Website Design
Webmaster
Computer Programmer

Data Science and Analytics
Actuary
Epidemiologist

Coding
Computer Software Engineer
Mathematician

MANUFACTURING AND TRANSPORTATION TECHNOLOGY

Dragster
Automotive Designer/Modeler
Race Car Engineer

Drone Works*
Pilot
UAV Operator

Mass Production
Electromechanical Engineer
Production Plan

Flight
Aircraft Systems Engineer
Astronaut

Junior Solar Sprint
Energy Efficiency Technician
Mechanical Engineer

Mechanical Engineering
Product Designer
Small Business Owner

Microcontroller Design
Manufacturing
Software Engineer

VEX Robotics
Computer Programmer
Automation Specialist

OKLAHOMA CareerTech

STEM Science, Technology, Engineering and Mathematics
TSA - Technology Student Association

*Oklahoma only

CHOOSING COMPETITIONS

OKLAHOMA TSA TECHNOLOGY STUDENT ASSOCIATION

TSA's program of activities enhances student education through its STEM-based competitions, which promote work-based learning and hands-on experiences. Competitions can be integrated easily into the classroom curriculum, or they can be used as an additional resource for career pathway initiatives. Through TSA's competitions, student members have the opportunity to develop real-world skills, strengthen their leadership abilities, and explore career opportunities.

The competitions listed below are grouped in categories. However, some competitions could fit into multiple categories. To see the careers associated with each competition, go to https://www.oktsa.org/competitive-event-informatior and click on the name of the competition you are interested in.

Middle School: Competitions

Architecture and Construction Technology
Construction Challenge
**Project Fair
Off the Grid
Structural Engineering

Communications Technology
Challenging Technology Issues
Children's Stories
Essays on Technology
Prepared Speech
**Creed
Promotional Marketing

Computer Science and Information Technology
Coding
Cybersecurity
Data Science and Analytics
Foundations of IT
Website Design

Leadership
Career Prep
Chapter Team
Community Service Video
Leadership Strategies
Tech Bowl

Manufacturing and Transportation Technology
Dragster
Flight
**Droneworks
Junior Solar Sprint
Mass Production
Mechanical Engineering
Microcontroller Design
VEX IQ Challenge

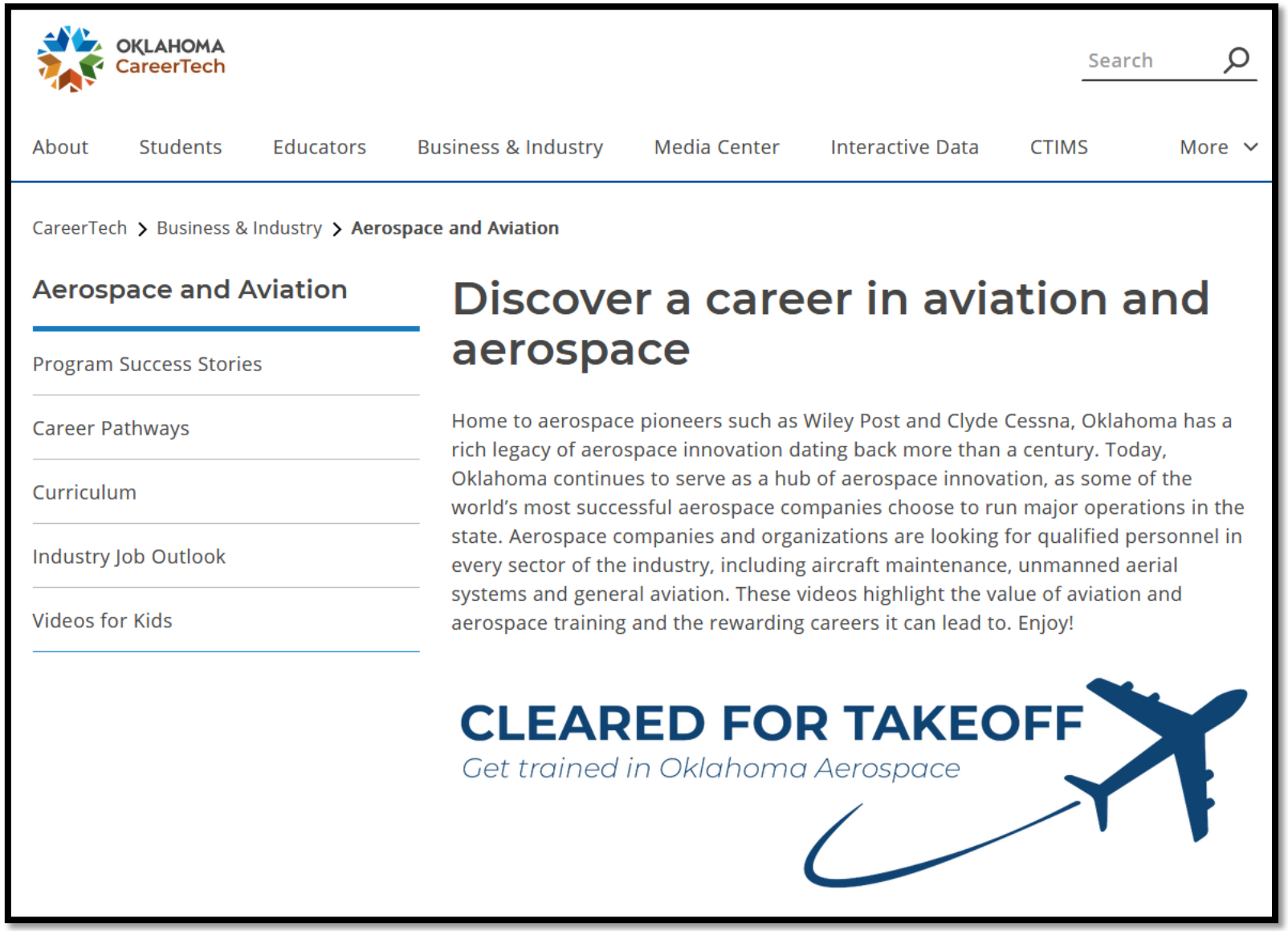
STEM (General)
CAD Foundations
Electrical Applications
Inventions and Innovations
Problem Solving
Technical Design
Video Game Design
**Rube Goldberg

STEM and the Arts
Digital Photography
STEM Animation
**Pin Design
**T-shirt Design

Technology
Biotechnol
Forensic
Medic
Syst

Technology Student Association

OKLAHOMA CareerTech STEM Science, Technology, Engineering and Math



Discover a Career in Aviation and Aerospace

https://oklahoma.gov/careertech/business-and-industry/aerospace-and-aviation.html

Questions?

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