

**GREAT PLAINS TECHNOLOGY CENTER  
COURSE OF STUDY**

<b><u>Career Cluster:</u></b>	Architecture and Construction (AC)
<b><u>Career Pathway:</u></b>	Construction (AC003)
<b><u>Career Major:</u></b>	Construction Technology Level I (AC0030083)
<b><u>Career Major Hours:</u></b>	Secondary Students: 1050 Hours Adult Students: 1050 Hours
<b><u>Instructor:</u></b>	Name: Bryan Smith Office Number: (580) 335-5525 or 800-460-5525 E-Mail Address: bjsmith@greatplains.edu
<b><u>Academic Credit:</u></b>	Secondary Students: 3 high school credits per year Adult Students: Transcript
<b><u>Prerequisites:</u></b>	None

**Career Major Description:**

The construction technician career major is an introduction to the safety practices, tools and equipment, trade related math, blueprint reading and job opportunities in the construction industry. Students will be able to perform all course work related to handling, placing and finishing concrete. Basic wood framing, concrete form building, roofing applications, thermal and moisture protection, exterior finishing, CNC design and operation, safety practices, general construction tools and equipment uses/operations. Basic introduction will be covered in the following trade areas, residential electrical services, safety, drain waste and vent systems, plastic pipe and fittings, copper pipe and fittings. Students will receive "hands-on" experience building on-site portable buildings and various community service projects as well as general maintenance projects on campus.

**Career Major Goals:**

Students enrolled in this program will be given the opportunity to develop the skills and attitudes needed to successfully enter the construction trades field according to their personal choice, ability, and resourcefulness.

Upon achieving the goals of this career major, students will:

- Become competent in the basic skills of the occupation.
- Become qualified for further related education and/or entry into the job market.
- Work as a team member.
- Pass at least one Occupational State of Oklahoma certification test.
- Become qualified for further related education and/or enter the job market.
- Demonstrate independence in using problem solving and critical thinking techniques in completing all work assignments.
- Develop the ability to work with limited supervision.
- Accept and abide by the rules and regulations established by the school and/or place of employment.

**Related Career Opportunities:**

- Commercial Carpenter
- Frame Carpenter
- Concrete form Carpenter
- Concrete Finisher
- CNC setup and Operation

**Career Major Objectives:**

After successful completion of this career major, the student will be able to:

- Utilize hand tools, power tools, ladders, and scaffolding in a safe, efficient manner.
- Apply basic concepts of math and measurement to perform various construction-related tasks.
- Apply proper layout and construction procedures for building projects.
- Develop an acceptable level of speed and accuracy to perform helper-level skills of the trade.
- Apply proper layout, cutting, and construction procedures for building projects.
- Apply proper design, layout, cutting, procedures for CNC operations.

**Career Major Course Sequence:**

- HS Student and Part-time Adult (Year One): Course Sequence I
- HS Student and Part-time Adult (Year Two): Course Sequence II

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**DESCRIPTION OF COURSES  
SEQUENCE I**

<b><u>Course #</u></b>	<b><u>Course Name</u></b>	<b><u>HST</u></b>	<b><u>HSL</u></b>	<b><u>ADI</u></b>	<b><u>ADL</u></b>
<b>TI00771</b>	<b>General Construction Safety &amp; First Aid Level I</b>	<b>10</b>	<b>20</b>	<b>10</b>	<b>20</b>
	General construction safety including tool and equipment safety, blood borne pathogens, CPR, PPE, confined space entry, hazardous materials, and right to know.				
<b>TI01559</b>	<b>Working in the Green Environment</b>	<b>15</b>	<b>30</b>	<b>15</b>	<b>30</b>
	This course introduces students to the concepts, materials and uses of environmentally safe materials and construction techniques using the Green Build approach to construction. Students will be able to understand the reasons why going green is a smarter and more efficient process to construction and how it will impact the environment and the world we live in.				
<b>TI071GP</b>	<b>Construction Site Safety Orientation (CORE)</b>	<b>12.5</b>	<b>25</b>	<b>12.5</b>	<b>25</b>
	Presents basic jobsite safety information to prepare workers for the construction environment. Describes the common causes of workplace incidents and accidents and how to avoid them. Introduces common personal protective equipment, including equipment required for work at height, and its proper use. Information related to safety in several specific environments, including welding areas and confined spaces, is also provided.				
<b>TI01461</b>	<b>Introduction to Construction Math (CORE)</b>	<b>10</b>	<b>20</b>	<b>10</b>	<b>20</b>
	Reviews basic math skills related to the construction trades and demonstrates how they apply to the trades. Covers multiple systems of measurement, decimals, fractions, and basic geometry.				
<b>TI01439</b>	<b>Introduction to Hand Tools (CORE)</b>	<b>10</b>	<b>20</b>	<b>10</b>	<b>20</b>
	This course introduces students to hand tools that are widely used in the construction industry, such as hammers, saws, levels, pullers, vises, and clamps. Explains the specific applications of each tool and shows how to use them properly. Also discusses important safety and maintenance issues related to hand tools.				

<b>TI01441</b>	<b>Introduction to Power Tools (CORE)</b>	<b>10</b>	<b>20</b>	<b>10</b>	<b>20</b>
Identifies and describes the operation of many power tools common in the construction environment. Provides instruction on proper use, as well as safe-handling guidelines and basic maintenance.					
<b>TI072GP</b>	<b>Intro to Construction Drawings (CORE)</b>	<b>10</b>	<b>20</b>	<b>10</b>	<b>20</b>
Introduces the basic terms, components, and symbols of construction drawings, as well as the most common drawing types. Also covers the interpretation and use of drawing dimensions.					
<b>TI073GP</b>	<b>Introduction to Basic Rigging (CORE)</b>	<b>7.5</b>	<b>15</b>	<b>7.5</b>	<b>15</b>
Provides basic information related to rigging and rigging hardware, such as slings, rigging hitches, and hoists. Emphasizes safe working habits in the vicinity of rigging operations.					
<b>TI01443</b>	<b>Basic Communication Skills (CORE)</b>	<b>7.5</b>	<b>15</b>	<b>7.5</b>	<b>15</b>
Provides techniques for effective communication on the job. Includes examples that emphasize the importance of both written and verbal communication skills. Describes the importance of reading skills in the construction industry and discusses effective telephone and email communication skills.					
<b>TI01471</b>	<b>Basic Employability Skills (CORE)</b>	<b>7.5</b>	<b>15</b>	<b>7.5</b>	<b>15</b>
Describes the opportunities offered by the construction trades. Discusses critical thinking and essential problem-solving skills. Also identifies and discusses positive social skills and presents information on computer systems and their industry applications.					
<b>TI074GP</b>	<b>Introduction to Material Handling</b>	<b>5</b>	<b>10</b>	<b>5</b>	<b>10</b>
Describes the hazards associated with handling materials and provides techniques to avoid both injury and property damage. Also introduces common material handling equipment.					
<b>TI075GP</b>	<b>Introduction to CNC Design Software</b>	<b>32</b>	<b>64</b>	<b>32</b>	<b>64</b>
This course covers the basic elements of the Aspire software, including file operations, 2D view control, creating vectors, text tools, transform, edit and align objects tools, node editing, material setup and toolpath operations.					
<b>TI076GP</b>	<b>Introduction to CNC Set up and operation</b>	<b>32</b>	<b>64</b>	<b>32</b>	<b>64</b>
This course covers the setup, operation and maintenance of the Axiom Precision Pro 8 CNC router and the Axiom Precision AutoRoute Elite CNC. Hands on lab time will focus on setting chip loads for various materials, feeds and speeds settings for efficient tool use and troubleshooting various CNC issues related to computer controls.					
<b>TI00802</b>	<b>Workforce Staging (8942)</b>	<b>5</b>	<b>13</b>	<b>5</b>	<b>13</b>
This course is designed to be delivered as an integrated component within the courses taken by the individual student. The course is designed for the development of leadership, personal development and employability skills.					

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<b>Sequence I Subtotal</b>	<b>Theory</b>	<b>Lab</b>	<b>Total</b>
<b>Hours:</b>			
High School Student:	174	351	525
Adult Student:	174	351	525

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**DESCRIPTION OF COURSES  
SEQUENCE II**

<u>Course #</u> <u>Course Name</u>	<u>HST</u>	<u>HSL</u>	<u>ADT</u>	<u>ADL</u>
<b>TI00921   Floor Systems</b>	<b>27.5</b>	<b>55</b>	<b>27.5</b>	<b>55</b>
Covers framing basics as well as the procedures for laying out and constructing a wood floor using common lumber as well as engineered building materials.				
<b>TI077GP   Ceiling Joist and Roof Framing</b>	<b>40</b>	<b>80</b>	<b>40</b>	<b>80</b>
Describes types of roofs and provides instructions for laying out rafters for gable roofs, hip roofs, and valley intersections. Covers stick built and truss-built roofs. Includes the basics of roof sheathing installation.				
<b>TI00763   Roofing Applications</b>	<b>25</b>	<b>50</b>	<b>25</b>	<b>50</b>
Describes how to properly prepare the roof deck and install roofing for residential and commercial buildings.				
<b>TI078GP   Wall Systems</b>	<b>20</b>	<b>40</b>	<b>20</b>	<b>40</b>
Describes procedures for laying out and framing walls, including roughing in door and window openings, constructing corners, partition Ts, and bracing walls. Includes the procedure to estimate the materials required to frame walls.				
<b>TI00224   Exterior Finishing</b>	<b>35</b>	<b>70</b>	<b>35</b>	<b>70</b>
This course covers the various types of exterior finish materials and their installation procedures, including wood, metal, vinyl, and fiber-cement siding.				
<b>TI079GP   CNC Design Software Level I</b>	<b>20</b>	<b>40</b>	<b>20</b>	<b>40</b>
This course covers the Aspire software, introduces 3D design and combining 3D models with 2D vectors for 2D and 2.5D cutting. Modeling tools are introduced and explained in order to develop custom 3D models, combining and editing existing 3D models to make larger or smaller components.				
<b>TI080GP   CNC Set up and Operation Level I</b>	<b>6.5</b>	<b>16</b>	<b>6.5</b>	<b>16</b>
This course covers the setup, operation and maintenance of the Axiom Precision Pro 8 CNC router and the Axiom Precision AutoRoute Elite CNC. Hands on lab time will focus on expanded chip loads for various materials, feeds and speeds settings for efficient tool use and troubleshooting various CNC issues related to computer controls as well as 3D tool path operations and in depth trouble shooting.				

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<b>Sequence II Subtotal</b>	<b>Theory</b>	<b>Lab</b>	<b>Total</b>
<b>Hours:</b>			
High School Student:	174	351	525
Adult Student:	174	351	525

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<b>Career Major Total:</b>	<b>Theory</b>	<b>Lab</b>	<b>Total</b>
High School Student:	348	702	1050
Adult Student:	348	702	1050

\* High school students may complete this career major in an adult enrollment status if necessary. Please see your instructor or counselor for details.

## **Evaluation Policy:**

### **Employability Grades (100 points per week; 50% of final grade)**

The employability skills grade is based on 20 points per day (which may include: attitude, attendance, safety, punctuality, cooperation, participation, clean-up, class preparation, school/classroom rules, and time management). Points will be deducted if these responsibilities are not met at the instructor's discretion. Students will be allowed to make up unearned employability points for **excused** absences only. Full credit will be given for assignments/tests that have been made up due to excused absences only (see Student Handbook).

### **Performance Grades (30% of final grade)**

- Live projects
- Performance or skill tests
- Homework
- Written Assignments

### **Test Grades (20% of final grade)**

- Test grades will be based on a 100-point scale.
- Test grades include written and/or skills tests.
- A test will be given for each unit of instruction.
- Tests are to be taken as a unit is completed.
- Tests must be completed within allotted time.

### **Final Grade (9 Weeks Period)**

9-weeks grade will be calculated by averaging grades in each category and summing each category according to their assigned weight. Progress reports will be sent to home schools at six and twelve-week intervals each semester as required or requested. Grades are accessible on-line at <http://sonisweb.greatplains.edu/studsect.cfm>

## **Grading Scale:**

The grading scale as adopted by the Board of Education is as follows:

A	=	90 – 100
B	=	80 – 89
C	=	70 – 79
D	=	60 – 69
F	=	Below 60
W	=	Withdrawn
I	=	Incomplete
N	=	No Grade (Refer to Student Handbook)

## **Make-Up Work Policy:**

**All Make-Up Work Is The Responsibility Of The Student.** Make-up work will be handled as specified in the Student Handbook. Please be sure to read and understand all student policies, especially make-up of assignments, tests and employability due to absences. Students should always arrange for any make-up work with the instructor as per the Student Handbook. Students should keep track of his or her progress and grades.

## **Attendance Policy:**

For specific information related to attendance and tardiness, refer to the Student Handbook. Students should keep a written record of their absences and tardiness.

### **Course Requirements and Expectations:**

The general course requirements and expectations include:

- Teaching methods consist of lecture and “hands on” projects.
- The student must demonstrate the ability to apply safety to all aspects of the construction field.
- It is recommended that the student meet with the teacher and their parents at least once per semester.
- All students must adhere to the policies and procedures in the GPTC Student Handbook.
- SkillsUSA is the student organization for the residential construction carpentry field. This club offers an outstanding opportunity to develop leadership and social skills. Students are highly encouraged to participate. Dues are paid by the superintendent.
- It is highly recommended that the student have purchased or attained the required tools and equipment for employment as a carpenter. Possessing a valid driver’s license will also benefit the student and is recommended.

### **Student Behavior Includes:**

- Safety glasses must be worn at all times when in the shop area.
- Name badges must be worn at all times.
- Follow all rules and regulations of Great Plains Technology Center.

***NOTE: For additional information or questions regarding the GPTC School policies and procedures, please refer to the Student Handbook and/or the Instructor.***

### **Industry Alignments:**

- National Center for Construction Education and Research (NCCER)
- National Association of Home Builders (NAHB)
- National Occupational Competency Testing Institute (NOCTI)

### **Certification Outcomes:**

**Tier 2** – Certifications Endorsed by Industry Organizations

- ODCTE: Construction Trainee (3001)
- ODCTE: Frame Carpenter (3005)

**Tier 6** – Certifications Administered/Proctored by Instructor

- OSHA 10-Hour General Industry Assessment
- Power Truck Operator card (fork lift)
- First aid/CPR Certification-Medic First Aid

**Tier 7** – National Career Readiness Certificate in Applied Mathematics, Locating Information and Reading for Information:

- Platinum Level – 6 or above in all three areas
- Gold Level – 5 or above in all three areas
- Silver Level – 4 or above in all three areas
- Bronze Level – 3 or above in all three areas

### **CIP Code and SOC Code Crosswalk:**

- CIP Code – 46.0201
- SOC Code – 47-2031

**OCAS program codes:**

- 9053 – Carpentry (first year)
- 9099 – Construction Technology (second year)

**Instructional Materials:**

*High School Students are not required to purchase textbooks or supplemental materials.*

**Textbooks (Digital Versions used where available):**

National Center for Construction Education and Research (NCCER). Core Curriculum; Introductory to Craft Skills. NCCERconnect Access Card, 5<sup>th</sup> ed. 978-0-13-423592-9. Saddle Hill: Pearson Prentice Hall, 2015. (\$54.00)

National Center for Construction Education and Research (NCCER). Your Role in the Green Environment 4th ed. 978-0-13-670120-0. Saddle Hill: Pearson Prentice Hall, 2019. (\$30.00)

National Center for Construction Education and Research (NCCER). Construction Technology: Construction Technology, NCCERconnect Access Card. 4th ed. 978-0-13-4816687-6. Saddle Hill: Pearson Prentice Hall, 2016. (\$140.00)