

**Career-Technical Credit Transfer (CT)²
 Agribusiness and Production Systems Career-Technical Assurance Guide (CTAG)
 September 19, 2016**

The following courses, indicated by Career-Technical Articulation Numbers (CTANs), are eligible for post-secondary credit and transfer among Ohio's public secondary career-technical institutions and state institutions of higher education. The SCTAI alignment document with ODE competencies and post-secondary learning outcomes can be found on the ODHE website at <https://www.ohiohighered.org/sctai/ctags>.

CTAGP001- Crop Production	Credits: 3 Semester Hours
<p>Advising Notes:</p> <p>In order to access post-secondary credit for this CTAN, the student must:</p> <ul style="list-style-type: none"> • Matriculate to an institution of higher education with an approved or comparable program within 3 years after completing the approved secondary program • Successfully complete <u>ODE secondary course Agronomic Systems (010620)</u> with a "C" or better and earn a qualifying score of 50 or higher on corresponding End of Course examination <p>To gain institutional approval for this CTAN, the institution must be mindful that:</p> <p>*If teaching Agronomic Systems and Greenhouse & Nursery Management, please see Requirement and Credit Condition Section.</p>	<p>CERTIFICATE OF AFFIRMATION: Can be used for course submission through CEMS. https://www.ohiohighered.org/transfer/ct2/affirmation</p>
CTAGP002 - Soil Fertility and Fertilizers	Credits: 3 Semester Hours
<p>Advising Notes:</p> <p>In order to access post-secondary credit for this CTAN, the student must:</p> <ul style="list-style-type: none"> • Matriculate to an institution of higher education with an approved or comparable program within 3 years after completing the approved secondary program • Successfully complete <u>ODE secondary course Greenhouse and Nursery Management (010610)</u> with a "C" or better and earn a qualifying score on the corresponding End-of-Course examination of 63 or higher <p>To gain institutional approval for this CTAN, the institution must be mindful that:</p> <p>*If teaching Agronomic Systems and Greenhouse & Nursery Management, please see Requirement and Credit Condition Section.</p>	<p>CERTIFICATE OF AFFIRMATION: Can be used for course submission through CEMS. https://www.ohiohighered.org/transfer/ct2/affirmation</p>

CTAGP003- Agribusiness Management**Credits: 3 Semester Hours**

Advising Notes: In order to access post-secondary credit for this CTAN, the student must adhere to the following:

- Matriculate to an institution of higher education with an approved or comparable program within 3 years after completing the approved secondary program
- Successfully complete ODE secondary course **Business Management for Agricultural and Environmental Systems (010115)** with a “C” or better and earn a qualifying score on the corresponding End of Course examination of **63 or higher**

CERTIFICATE OF AFFIRMATION: Can be used for course submission through CEMS.

<https://www.ohiohighered.org/transfer/ct2/affirmation>

Each CTAN identifies the learning outcomes that are equivalent or common in introductory technical courses. In order for students to be able to receive credit under these agreements, the career-technical secondary programs and the post-secondary institutions must document that their course content matches the learning outcomes in the CTAN. In accordance with ORC 3333.162, industry standards and certifications provide documentation of student learning. Recognized industry standards are expectations established by business, industry, state agencies, or professional associations that define training program curricular requirements, establishes certification or licensure criteria, and often serves as the basis for program accreditation.

Requirements and Credit Conditions:***Notes for Programs Submitting from Secondary Career Technical High Schools/Districts/Compacts:**

The ODE course Agronomic Systems (010620) is aligned with the learning outcomes in the CTAN Crop Production (CTAGP001). However, in secondary programs, it is possible that the same course Agronomic Systems (010620) covers the learning outcomes for CTAN Soils Fertility and Fertilizers (CTAGP002). If a secondary institution believes that their Agronomic Systems course fulfills the learning outcomes for both CTAGP001 and CTAGP002, consult the alignment document at <https://www.ohiohighered.org/sctai/ctags> for an in depth understanding of the two CTANs. If an institution chooses to use the Agronomics Systems course for both CTANs, a full review is required for both CTANs.

1. The receiving institution must have a comparable program, major, or course that has been approved through submission to the Ohio Department of Higher Education (CT)² approval process for the CTAN listed in this document.
2. Credits apply to courses in the specified technical area at Ohio’s public institutions of higher education, if the institution offers courses in the specific technical area. In the absence of an equivalent course, and when the institution offers the technical program, the receiving institution will guarantee to grant and apply an equivalent credit value of the Career-Technical Articulation Number (CTAN) toward the technical requirements of the specific degree/certificate program.
3. The applicant must provide proof to the receiving institution that she/he completed a course that has been approved through the (CT)² approval process and that she/he holds the appropriate credential or has passed the end-of-course assessment(s).
4. A career-technical student seeking credit under the terms of this CTAG must apply and be accepted to the college within three years of completing a career-technical education program/course or within the currency of the industry certificate or license.
5. A career-technical student who meets all eligibility criteria will receive the credit hour value for the comparable course(s) as offered at the receiving state institution of higher education.
6. The admission requirements of individual institutions and/or programs are unaffected by the implementation of (CT)² outcomes.
7. The transfer of credit, through this CTAG, will not exempt a student from the residency requirements at the receiving institution.

Secondary Career-Technical students must complete the Agribusiness and Production Systems Pathway to be eligible for credit under this CTAG. This pathway is outlined in the Ohio Department of Education's *Agriculture and Environmental Systems Career Field Technical Content Standards*.

CTAGP001 – Crop Production

Credits: 3 Semester Hours

General Course Description: Students will gain an understanding of the general principles involved in crop production, including soil, nutrients, plant breeding, planting techniques, tillage systems, pests, budgets, and environmental factors. Students will also learn the advantages and disadvantages of conventional, organic, and sustainable production systems.

Credits: 3 Semester Hours

Learning Outcomes:

1. *Develop an understanding of crop production and then demonstrate this knowledge through the use of financial concepts
2. *Compare and contrast the differences that exist among agricultural production systems and translate these differences into costs and returns for farmers, consumers and the environment
3. *Compare and contrast conventional, sustainable, and organic agronomic production systems
4. *Compare and contrast tillage systems
5. Describe the processes involved in the evolution of seeds to plants and explain the impact of the environment on the physiology and structure of plants

** Learning Outcomes Marked with an asterisk are essential*

CTAGP002- Soil Fertility and Fertilizers

Credits: 3 Semester Hours

General Course Description: Students will learn the nutrient requirements that plants require from soil and they will learn to identify plant symptoms that develop when these nutrients are deficient. In addition, students will collect soil samples and analyze the nutrient contents of soil to determine nutrients that can be added to enhance plant growth

Credits: 3 Semester Hours

Learning Outcomes:

1. *Identify nutrients that are essential for plant growth and describe the contributions these nutrients make to growth over the life cycle of plants
2. *Identify symptoms that develop from nutrient deficiency and describe the remedies that are needed to address these deficiencies
3. *Describe the process by which soil nutrients interact according to soil type
4. *Explain the procedures involved in soil sampling and analysis and develop the capacity to conduct and interpret soil analyses to determine needed ingredients

** Learning Outcomes Marked with an asterisk are essential*

General Course Description: Students will develop skills in the areas of finance, management, and marketing that are critical to the success of an agribusiness firm. These skills will involve an understanding of concepts such as bids, budgets, business plans, cash flows, contracts, inventory controls, marketing plans, supply chain, negotiations, and strategic alternatives.

Credits: 3 Semester Hours

Learning Outcomes:

1. *Compare and contrast the characteristics of agribusiness firms by structure, common organizational strategies, business type and size
2. *Identify and explain the major components of an agribusiness firm with respect to finance, marketing, and management
3. *Identify and interpret the supply chain management of operating an agribusiness firm with respect to budgeting, financing, successful negotiations, bidding, contracting, inventory control and adequate cash flows
4. *Explain the interrelationship of a business plan, and an effective human resource management plan
5. *Develop a comprehensive business plan

*** Learning Outcomes Marked with an asterisk are essential**

**Agribusiness and Production Systems
Panel Participants
Fall 2013-2016**

Dr. Eugene Jones	The Ohio State University	SCTAI Panel Lead Expert
Lawrence Everett	Clark State Community College	SCTAI Panel Expert
Subbu Kumarappan	The Ohio State University	SCTAI Panel Expert
Von Plessner	Northwest State Community College	SCTAI Panel Expert
Cameron Thraen	The Ohio State University	SCTAI Panel Expert
Evan Schafer	Miami Trace High School	Item Writer
Anna Homer	Sentinel Career Center	Item Writer
Tom Smith	Southern State Community College	Item Writer
Greg McGlinch	Wright State University, Lake Campus	Item Writer
Dr. Eugene Jones	The Ohio State University	Item Writer
Cyndi Brill	Ohio Department of Education	Program Specialist
Dr. James Austin	The Center for Education and Training for Employment at OSU	Assessment Services Director
Anne Skuce	Ohio Department of Higher Education	Senior Associate Director, SCTAI
E. Craig Wiget	Ohio Department of Higher Education	Special Coach