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SUBSTANTIVE CURRICULAR CHANGE FOR ROUTINE REVIEW

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Sponsoring Institution: University of Missouri Columbia

Program Title: Agricultural Systems Technology

Degree/Certificate: BS-Bachelor of Science

If other, please list: Click here to enter text

Options: Click here to enter text

Delivery Site: MU Campus

CIP Classification: **01.0201**

Implementation Date: **7/1/2022**

PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS

Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below.

Quantification of performance goals should be included wherever possible.

1. Student Preparation
- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required.
  No special admissions requirements or procedures beyond university requirements.

- Characteristics of a specific population to be served, if applicable.
  Click here to enter text

2. Faculty Characteristics
- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.
  PhD in the discipline or related discipline

- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.
  100% of the credit hours taught within the discipline (AG_S_TCH) will be taught by full time faculty.

- Expectations for professional activities, special student contact, teaching/learning innovation.
  Industry internships

3. Enrollment Projections
- Student FTE majoring in program by the end of five years.
  80 - 100

- Percent of full time and part time enrollment by the end of five years.

100%

<p style="text-align: center;">STUDENT ENROLLMENT PROJECTIONS</p>

YEAR	1	2	3	4	5
Full Time	45	60	70	75	85
Part Time					
Total	45	60	70	75	85

4. Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.
  Existing program with an average of 35 graduates per year over the past five years (2017 – 2021).

- Special skills specific to the program.
  Precision and digital technology applied to agriculture.

- Proportion of students who will achieve licensing, certification, or registration.
  None, no licensure or certification required for industry employment.

- Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.
  No assessments required of graduates.

- Placement rates in related fields, in other fields, unemployed.
  100% (86.4% full-time, 9.1% part-time) Career Success from 2019 through 2021. Most recent data: 81.8% employed in Missouri, median salary = $51,000.

- Transfer rates, continuous study.
  Average of 5 external transfers per academic year (2017 – 2021).

5. Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide rationale.
  No specialized accreditation exists beyond the University's accreditation with the Higher Learning Commission.

6. Program Structure

A. Total credits required for graduation: **120**

B. Residency requirements, if any:
   Complete 30 of the last 36 credit hours with MU course work.

C. General education: Total credits:
   37-42 credit hours

Courses (specific courses OR distribution area and credits)

Foundational Courses (may fulfill some University General Education requirements.

Course Number	Credits	Course Title
Math 1100	3	College Algebra
ABM 2225	3	Statistical Analysis
BIO SC 1010 & 1020	5	Principles and Concepts of Biology with Laboratory
CHEM 1100	3	Atoms and Molecules
PLNT SCI 2110	3	Plants and their Cultivation
ABM 1041	3	Applied Microeconomics
ABM 1042	3	Applied Macroeconomics
ACCTCY	2036	Accounting I
AGSC COM	2220	Verbal Communication in AFNR

D. Major requirements: Total credits: 41

Course Number	Credits	Course Title
AG S TCH 1120	1	Career Development
AG S TCH 1020	3	Interlocution to Agricultural Systems Technology
AG S TCH 1040	3	Physical Principles for Agricultural Applications
AG S TCH 2340	3	Pesticide Application Equipment
AG S TCH 3225	3	Sensors and Control for Agricultural Systems
AG S TCH 4140	3	Electricity Wiring and Equipment
AG S TCH 4160	3	Internet of Things for Agricultural Technology
AG S TCH 4320	4	Agricultural Equipment and Machinery
AG S TCH 4360	3	Precision Agriculture Science and Technology
AG S TCH 4390	3	Optimization and Management of Food and Agricultural Systems
Supporting AG S TCH	12	

E. Free elective credits: **37 - 42**
   (sum of C, D, and E should equal A)

F. Requirements for thesis, internship or other capstone experience:
   Capstone: 4000 level course.

G. Any unique features such as interdepartmental cooperation:
   None.

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Approval Path

1. Mon, 28 Mar 2022 21:34:03 GMT
   Carla Whitney (whitneycm): Approved for Form Check
2. Tue, 29 Mar 2022 19:50:15 GMT
   Jacqueline Beary (bearyj): Approved for Initial Prov Rvw
3. Wed, 30 Mar 2022 16:00:53 GMT
   Jessica Bowen (bowenjc): Rollback to Initiator
4. Mon, 11 Apr 2022 17:29:49 GMT
   Carla Whitney (whitneycm): Approved for Form Check
5. Mon, 11 Apr 2022 18:14:46 GMT
   Jacqueline Beary (bearyj): Approved for Initial Prov Rvw
6. Mon, 11 Apr 2022 18:19:11 GMT
   Heike Buecking (heike.buecking): Approved for PST Chair
7. Tue, 12 Apr 2022 16:28:31 GMT
   Sharyn Freyermuth (freyermuths): Approved for CAFNR CC Vote
8. Tue, 12 Apr 2022 21:38:52 GMT
   Anthony Lupo (lupoa): Approved for CAFNR CC Chair
9. Wed, 13 Apr 2022 16:59:17 GMT
   Bryan Garton (gartonb): Rollback to Initiator
10. Thu, 14 Apr 2022 21:04:02 GMT
    Carla Whitney (whitneycm): Approved for Form Check
11. Fri, 15 Apr 2022 19:52:51 GMT
    Jacqueline Beary (bearyj): Approved for Initial Prov Rvw
12. Wed, 20 Apr 2022 20:31:47 GMT
    Heike Buecking (heike.buecking): Approved for PST Chair
13. Thu, 21 Apr 2022 13:37:46 GMT
    7/13 votes cast. Yes: 100% No: 0%
    Approved for CAFNR CC Vote
14. Thu, 21 Apr 2022 21:03:11 GMT
    Anthony Lupo (lupoa): Approved for CAFNR CC Chair
15. Mon, 25 Apr 2022 17:29:54 GMT
    Bryan Garton (gartonb): Approved for CAFNR Dean
16. Mon, 25 Apr 2022 17:31:36 GMT
    Carla Whitney (whitneycm): Approved for Workflow Rvw
17. Sat, 07 May 2022 23:36:26 GMT
    Joyce Albright (albrightj): Approved for BUS Dean Ugrd
18. Fri, 08 Jul 2022 13:21:39 GMT
    Amy Simons (simonsa): Approved for UCC
19. Fri, 08 Jul 2022 13:48:43 GMT
    Jimmy Spain (spainj): Approved for VPUGS Rvw
20. Tue, 12 Jul 2022 16:43:40 GMT
    Alexandra Socarides (socaridesa): Approved for Provost

<h1 style="text-align:center">Program Status:</h1>

Status: If you are proposing to inactivate this academic program, change the status using the dropdown to Inactive. Otherwise, leave as active and note your changes on the rest of the form below.
Active

<h1 style="text-align:center">Program Characteristics:</h1>

Campus: University of Missouri - Columbia

Type of Program: Bachelors

Emphasis Areas: Do you have plans at this point to have emphasis areas to go with this degree? No

Specify program level: Undergraduate

Program Title: List the exact name of the program. If a degree, include the abbreviation for the degree (i.e. BA, BS, MS, PhD). If a minor, graduate minor, certificate or graduate certificate, include this first in the program title. If an emphasis, first list the parent degree title (i.e. BA in Undergraduate Studies), followed by "with Emphasis in", followed by the emphasis title.

How it is listed here is what will display on the transcript (and diploma if a degree).

Program Title: BS in Agricultural Systems Technology

College(s) or School(s) offering the program: Select the college or school offering the program. If more than one, use the green plus sign to add rows for listing additional colleges, and use the green arrows to list the primary unit at the top.

College
1   Agriculture, Food & Natural Resources

Unit(s) offering the program: Select the unit offering the program. If more than one, use the green plus sign to add rows for listing additional units, and use the green arrows to list the primary unit at the top. Only units currently offering programs are in the list. See the blue help bubble for instructions if unit is not listed.

Units (Departments, Divisions, etc.)
1   Plant Science & Technology

Total credits required for graduation/completion: 120

Mode of Program Delivery: Select the option below which best fits the program.
Traditional Program – All program requirements are completed face-to-face, in writing or orally. No online technology is used outside the classroom other than LMS systems such as Canvas. May have video of the class that is used during the initial delivery and viewed later.

Delivery Site(s): Select the option below which best describes the physical locations where the program will be delivered. This would include face-to-face sites or sites for receiving remote delivery. This would not include online delivery. MU Campus

CIP Code: Use the "Find" link to search the government database for applicable CIP Code.
01.0201 - Agricultural Mechanization, General.

Fit with University Mission and Other Academic Programs:

Collaboration within the state:

Collaboration: Are there plans to collaborate with existing complementary programs on campus, across the UM System, and/or in the state? No

Feasibility: Describe if collaboration is even feasible.
Not currently feasible.

Program Curriculum:

Program Structure

Accelerated Program: Does this change proposal include a new accelerated option within an existing program(s)? No

Dual Degree: Does this change proposal include a new dual degree option with existing programs? No

Program Requirements: Describe all requirements for the program. This content will be displayed in the Program Requirements area of the online University Catalog.

Major Program Requirements

Students who earn a Bachelor of Science in Agricultural Systems Technology, the management of technical agricultural systems, are required to complete all University general education, University graduation and degree requirements, including selected foundational courses, which may fulfill some University general education requirements.

Foundational Courses		29-30
MATH 1100	College Algebra	3
ABM 2225	Statistical Analysis	3
or MATH 1140	Trigonometry	
or MATH 1400	Calculus for Social and Life Sciences I	
or MATH 1500	Analytic Geometry and Calculus I	
or STAT 1200	Introductory Statistical Reasoning	
or ABM 2123	Quantitative Applications in Agricultural and Natural Resource Sciences	
BIO_SC 1010 & BIO_SC 1020	General Principles and Concepts of Biology and General Biology Laboratory	5

or BIO_SC 1030	General Principles and Concepts of Biology with Laboratory	
or BIO_SC 1200	General Botany with Laboratory	
or BIO_SC 1500	Introduction to Biological Systems with Laboratory	
CHEM 1100	Atoms and Molecules with Lab	3-4
or CHEM 1320	College Chemistry I	
PLNT_SCI 2110*	Plants and their Cultivation	3
or SOIL 2100*	Introduction to Soils	
ABM 1041	Applied Microeconomics	3
ABM 1042	Applied Macroeconomics	3
ACCTCY 2036*	Accounting I	3
or ACCTCY 2010*	Introduction to Accounting	
or ACCTCY 2026*	Accounting I	
AGSC_COM 2220	Verbal Communication in Agriculture, Food and Natural Resources	3
or COMMUN 1200	Public Speaking	
CORE Requirements		**29**
AG_S_TCH 1120*	Career Development	1
AG_S_TCH 1020	Introduction to Agricultural Systems Technology	3
AG_S_TCH 1040	Physical Principles for Agricultural Applications	3
AG_S_TCH 2340	Pesticide Application Equipment	3
AG_S_TCH 3225	Sensors and Control for Agricultural Systems	3
AG_S_TCH 4140	Electricity: Wiring and Equipment	3
AG_S_TCH 4160*	Internet of Things for Agricultural Technology	3
AG_S_TCH 4320*	Agricultural Equipment and Machinery	4
AG_S_TCH 4360	Precision Agriculture Science and Technology	3
AG_S_TCH 4390*	Optimization and Management of Food and Agricultural Systems	3

Supporting AST Electives   **12**

AG_S_TCH 2220	Agricultural/Industrial Facility Systems	3
AG_S_TCH 2360	Fluid Power	3
AG_S_TCH 4220	Material Handling and Conditioning	3
AG_S_TCH 4420*	Surface Water Management	3
AG_S_TCH 4365*	Machinery Management Using Precision Agriculture Technology	3
AG_S_TCH 4366*	Data Management and Analysis Using Precision Agriculture Technology	3
AG_S_TCH 4368*	Profit Strategies Using Precision Agriculture Technology	3
AG_S_TCH 4460*	Irrigation and Drainage	3
AG_S_TCH 4940*	Agricultural Systems Technology Internship	2-5

In consultation with their advisor, students may select elective courses to bring their total credit hours to the 120 hour minimum.

Suggested Electives

PLNT_SCI 2125*	Plant Structure and Function	4
PLNT_SCI 3210W*	Principles of Weed Science - Writing Intensive	4
PLNT_SCI 3275*	Grain Crops	3
PLNT_SCI 4313*	Soil Fertility and Plant Nutrition	3
ABM 3241W*	Ethical Issues in Agriculture - Writing Intensive	3
ABM 3260*	General Farm Management	3
ABM 3256*	Agribusiness and Biotechnology Law	3
ABM 3224W*	New Products Marketing - Writing Intensive	3

Program Requirements Change: Significant changes were made to the program requirements.

Courses outside your School/College: Outside of general education requirements or electives, indicate all of the academic units from whose course(s) you are newly adding to or removing from the program requirements.

Business

Admission Requirements: Describe any special admission procedures or qualifications required for this program which exceed regular university admission standards (ACT score, completion of core curriculum, portfolio, interview, etc) and provide a rationale. Indicate if no special qualifications are required.

 No special qualifications are required over and above general admission standards.

Catalog Information:

Information provided in this section is used to automatically populate program information in the online university catalog when published each year in June.

Catalog year for changes: For all changes being made to the program, indicate the catalog year in which the changed information should begin to display. 2022-23

Change Justification:

Term effective: Select the term these changes are to be effective. Fall 2022

Justification for changes: Change in course listings and program requirements

Change due to accreditation: Are the changes you are proposing precipitated by a change in the rules and requirements of your accrediting agency? No