Agricultural Watershed Management Tech I

Certificate of Completion

Required courses:

AWM 101	Conservation Practice Systems I
AWM 102	Conservation Practice Systems II
AWM 103	Nutrient Use Efficiency
AWM 107	Agricultural Watershed Management

The course requirements can be completed in nine months.

FALL 2017 – SPRINGFIELD

AWM 107 – Agricultural Watershed Management
Aug. 22-Oct. 12
Tuesday and Thursday, 6-9 p.m.
Workforce Careers Center, room 2115
This course identifies the complexities of government agencies, non-governmental organizations and best management practices in today's watershed environment.

AWM 101 – Conservation Practice Systems I
Oct. 17-Dec. 14
Tuesday and Thursday, 4-9 p.m.
Workforce Careers Center, room 2115
This course features surface-level cultural activities to build soil strength through cover crops.

Fall pilot courses are offered at no cost to the student. Costs are covered by the TAACCCT grant.

Agricultural Watershed Management Tech II

Certificate of Achievement

Required courses:

AWM 101	Conservation Practice Systems I
AWM 102	Conservation Practice Systems II
AWM 103	Nutrient Use Efficiency
AWM 104	Agriculture Readiness for Change
AWM 105	Agricultural "Big-Data" Management
AWM 106	Agricultural Sediment Fundamentals
AWM 107	Agricultural Watershed Management
AFO 208	Applied Skills in Ag Mechanization
AGR 208	Introduction to Agricultural Mechanics
ESI 101	Employability Skills

The course requirements can be completed in 18 months.

2+2 Agreement with SIUE

Receive the Agricultural Watershed Management Tech II Certificate of Achievement from LLCC and a bachelor's degree in Integrative Studies from SIUE. Efficiently and cost-effectively progress toward completion of a bachelor's degree program. Special benefits to program participants include access to SIUE's resources, activities and academic advisement as appropriate while attending LLCC. For more information on 2+2, visit: http://www.siue.edu/transfer/programs/2-2-agreement.shtml.

Lincoln Land Community College
Workforce Development & Community Education

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Agricultural Watershed Management

Agricultural Watershed Management is a new program in LLCC Workforce Development that provides valuable training on this emerging aspect of today's farming industry. Flexibility is built-in. Apply what you learn immediately to your work as you earn portable, stackable certificates which can build upon each other and lead to an associate or bachelor's degree.

Program highlights include:

- Introduction to the comprehensive problems and best practice solutions associated with agricultural soil health, including nutrient loss reduction and sediment retention.
- Hands-on laboratory practice combined with online learning for emerging agricultural watershed management technologies.
- Instructors that are veteran educators and practicing professionals doing applied work in this field.

Intended audience: farm owners and operators, agricultural service providers, and traditional agriculture and environmental science students at any level.

For more information about the program, contact David Bowman at 217.786.2317 or david.bowman@llcc.edu. To register for Springfield classes, call 217.786.2292.

LLCC is a DOL TAACCCT awardee. Funds from the TAACCCT grant made this program possible.

SUCCESS FACTOR DASHBOARD	AWM101 Conservation Practice Systems I	AWM102 Conservation Practice Systems II	AWM103 Nutrient Use Efficiency	AWM104 Agriculture Readiness for Change	AWM105 Agricultural Big-Data Management	AWM106 Sediment Fundamentals	AWM107 Agricultural Watershed Management
EACH COURSE'S EDUCATION UNITS & CORRESPONDING LESSON TOPIC	**UNIT 1 – INTRODUCTION TO CONSERVATION PRACTICE SYSTEMS I** Lesson 1: Glossary of terms in watershed ecology and agricultural watershed management Lesson 2: Describing and defining … introduction to agricultural conservation practices	**UNIT 1 – CONSERVATION PRACTICE SYSTEMS II** Lesson 1: Glossary of basic drainage terms Lesson 2: Describing and defining … introduction to agricultural drainage and water management	**UNIT 1 – AGRICULTURAL NUTRIENT USE TERMINOLOGY AND INTRODUCTION** Lesson 1: Glossary of agricultural nutrient use terminology Lesson 2: Introduction to agricultural nutrient use efficiency	**UNIT 1 – GLOSSARY OF SOCIO-ECONOMIC TERMS AND INTRODUCTION TO CHANGE IN AGRICULTURAL SETTINGS** Lesson 1: Glossary of agricultural socio-economic principles Lesson 2: Power, conflict and change in agricultural policy and watershed management	**UNIT 1 – AGRICULTURAL BIG-DATA MANAGEMENT (ABM) AND HOW DOES ABM EFFECT WATERSHEDS THROUGH FERTILITY DESCISION** Lesson 1: Glossary of ABM terms: Field data, software and hardware Lesson 2: Introduction to agricultural big-data management	**UNIT 1 – SEDIMENTS RELATED TO AGRICULTURAL WATERSHED MANAGEMENT** Lesson 1: Glossary of basic and advanced sediment terminology Lesson 2: Sources of sediment in water bodies – rivers, lakes, etc.	**UNIT 1 – INTRODUCTION TO AGRICULTURAL WATERSHED MANAGEMENT** Lesson 1: Glossary of basic and advanced terms in watershed ecology and agricultural watershed management Lesson 2: Understanding agricultural geography and physical characteristics – comprising "stakeholders" up and downstream
	UNIT 2 – CONSERVATION CROPPING SYSTEMS Lesson 1: Crop rotations and their cropping opportunities in nutrient loss reductions Lesson 2: Planning for a conservation cropping system	**UNIT 2 – INTRODUCTION TO NATURAL AND AGRICULTURAL DRAINAGE, INCLUDING ILLINOIS' DRAINAGE LAW** Lesson 1: Natural and agricultural drainage Lesson 2: History and scope of Illinois drainage law	**UNIT 2 – 18 ESSENTIAL CROP ELEMENTS AND THEIR NUTRIENT CYCLES** Lesson 1: The 18 essential crop elements and their cycles Lesson 2: Recognizing relevant macro and micro plant nutrient cycles	**UNIT 2 – CHANGING IDEOLOGIES AND ECONOMIES OF SCALE IN AGRICULTURE** Lesson 1: Agricultural economies of scale Lesson 2: Influencing agricultural attitudes and interests in global, sustainable resources	**UNIT 2 – DIFFERENTIATING AGRICULTURAL TRENDS AND STATISTICS** Lesson 1: Treatment analysis/data analytics Lesson 2: Interactions of field data	**UNIT 2 – POSITIVES AND NEGATIVE OF SOIL SEDIMENTS** Lesson 1: Problems associated with sediments in agricultural watersheds Lesson 2: The economic impact of sediments from agricultural watersheds	**UNIT 2 – FEDERAL LAWS AND REGULATIONS RELATING TO AGRICULTURAL WATERSHEDS** Lesson 1: Clean Water Act (EPA) Lesson 2: All federal government regulatory roles and responsibilities in watershed management
	UNIT 3 – STRATEGIES FOR TILLAGE REDUCTION SYSTEMS Lesson 1: Conventional, zero-till and strip-till methods Lesson 2: Introduction to soil profile microorganisms and root development under conventional, zero-till and strip-till systems	**UNIT 3 – SURFACE AND SUBSURFACE AGRICULTURAL DRAINAGE** Lesson 1: Surface drainage systems (by gravity) Lesson 2: Subsurface drainage systems (by gravity or pumped)	**UNIT 3 – SOIL STRUCTURE AND COMPONENTS** Lesson 1: Explaining soil structure and each component – minerals, air, water and organisms Lesson 2: Cations, anions, soil cation exchange capacity (CEC) and more	**UNIT 3 – WHAT DOES SUSTAINABILITY MEAN?** Lesson 1: Agricultural sustainability Lesson 2: Planning for one's own sustainability	**UNIT 3 – CROP YIELD IMPACTS AND CROP REMOVAL EQUATIONS** Lesson 1: Crop yield impacts Lesson 2: Crop removal equations for nutrient product recommendations	**UNIT 3 – SOIL EROSION UNDER DIFFERING TYPES OF WATER EROSION** Lesson 1: Introduction to the soil erosion process and differing types of soil erosion Lesson 2: Understanding the use of RUSLE and predicting agricultural soil loss	**UNIT 3 – STATE (IL), COUNTY AND LOCAL GOVERNMENT RELATING TO WATERSHED MANAGEMENT** Lesson 1: State (Illinois) and local laws relating to watershed management Lesson 2: County-level governmental agencies with state-level involvement – drainage districts
	UNIT 4 – NUTRIENT DIFFERENTIALS IN CONSERVATION CROPPING SYSTEMS Lesson 1: Introduction to nutrient management under conservation cropping systems Lesson 2: Fertility do's and don'ts of conservation cropping management	**UNIT 4 – MAIN AGRICULTURAL DRAINAGE OUTLET SYSTEMS** Lesson 1: Deep and shallow collectors Lesson 2: Main/Disposal drains	**UNIT 4 – SOIL MICRO-FLORA AND MICRO-FAUNA** Lesson 1: Soil micro-flora and micro-fauna Lesson 2: Living soil organisms – how they function and affect nutrient efficiency	**UNIT 4 – POWER OF PLACE AND ACCOUNTABILITY WITHOUT REGULATION IN 21ST CENTURY AGRICULTURE** Lesson 1: "Power of Place" and altitude change Lesson 2: Accountability with, or without, regulation	**UNIT 4 – CORRECT SOIL SAMPLING TECHNIQUES FOR YIELD INTEGRATION** Lesson 1: Correct soil sampling techniques Lesson 2: Grid and zone sampling (correct sizing)	**UNIT 4 – SOIL LOSS IS PRODUCTIVITY LOST** Lesson 1: How soil erosion effects soil productivity Lesson 2: Sediment conservation practices that reduce erosion loss	**UNIT 4 – LOCAL-LEVEL GOVERNMENT OFFICES RELATING TO WATERSHED MANAGEMENT** Lesson 1: NRCS's current programs at the local level Lesson 2: SWCD's current programs at the local level – urban, suburban and rural
	UNIT 5 – SIMPLE-FIX/SINGLE-SEASON VERSUS COMPLEX/MULTI-SEASON CONSERVATION CROPPING SYSTEMS Lesson 1: Simple-fix/Single-season conservation cropping systems Lesson 2: Complex/Multi-season conservation cropping systems	**UNIT 5 – SITE-SPECIFIC DRAINAGE CALCULATIONS** Lesson 1: Runoff model Lesson 2: Drainage equation	**UNIT 5 – NUTRIENT MANAGEMENT'S – THE "4Rs"** Lesson 1: "4Rs" of nutrient management Lesson 2: Implement a "4Rs" strategy	**UNIT 5 – SOCIO-ECONOMIC DRIVER OF CHANGE (OR NOT TO CHANGE)** Lesson 1: "Cultural Capital" – the "haves" and the "have-nots" Lesson 2: Other agents of cultural capital – economics, markets and management decisions	**UNIT 5 – ZONE MANAGEMENT THROUGH LONG TERM SOIL TESTING** Lesson 1: Pros and cons of zone versus grid sampling Lesson 2: Zone management – Veris, multi-year yield analysis and soil type	**UNIT 5 – CAN SOIL LOSSES BE "TOLERABLE"** Lesson 1: List best management practices for reducing the "T-factor" (tolerance-factor) and their relative impact Lesson 2: "Tolerable-loss" sediment related to agricultural watershed management	**UNIT 5 – NON-GOVERNMENTAL ORGANIZATIONS WITH INTEREST IN AGRICULTURAL WATERSHEDS** Lesson 1: Farmer and agribusiness NGOs affecting agricultural watersheds Lesson 2: Non-agr. NGOs affecting agricultural watersheds (Nature Conservancy, American Farmland Trust, etc.)
	UNIT 6 – DIFFICULT-FIX/MULTI-SEASON CONSERVATION CROPPING SYSTEMS Lesson 1: Difficult-fix/Multi-season species selection and care Lesson 2: Difficult-fix/Multi-season species cropping	**UNIT 6 – AGRICULTURAL DRAINAGE WATER MANAGEMENT** Lesson 1: Primary drainage water management criteria Lesson 2: Additional drainage water management criteria	**UNIT 6 – SUPPLEMENTAL AGRICULTURAL NUTRIENTS AND EFFICIENCY (INCLUDING ALL MANURES)** Lesson 1: Animal manure nutrient basics Lesson 2: Best management practices of animal manures	**UNIT 6 – PREDICTORS OF CHANGE: THE 5 W'S (WHO, WHAT, WHEN, WHERE, AND WHY)?** Lesson 1: Individuals and change management Lesson 2: Early-adopter motivators and where agricultural change can flourish	**UNIT 6 – SOIL WATER BASICS AND MUCH MORE** Lesson 1: Soil moisture sensors Lesson 2: Basics of soil-water interaction (soil physics)	**UNIT 6 – VARIOUS REGULATIONS AND INCENTIVES TO REDUCE SOIL LOADING** Lesson 1: Summarize inducements to reduce sediment loadings in Illinois watersheds and their success Lesson 2: Bearing responsibility for agricultural watershed erosion soil losses	**UNIT 6 – "4R" AGRICULTURAL NUTRIENT MANAGEMENT SYSTEMS** Lesson 1: Review of "4Rs" and "4Rs4U" of nutrient management Lesson 2: Nutrient loss reduction through modeling "4R" nutrient management
	UNIT 7 – SEED SELECTION AND PESTICIDE USE IN CONSERVATION CROPPING SYSTEMS Lesson 1: Seed selection strategies Lesson 2: Pesticide strategies	**UNIT 7 – AGRICULTURAL TILE WATER NUTRIENT REMOVAL** Lesson 1: Saturated buffers Lesson 2: Bioreactors	**UNIT 7 – REDUCING AGRICULTURAL NUTRIENT LOSSES** Lesson 1: BMPs – increasing soil nutrient retention Lesson 2: BMPs – decreasing nutrient losses to the environment	**UNIT 7 – ADVOCACY CHANGE ROLES** Lesson 1: Pinpointing the need for advocacy of agricultural change Lesson 2: Early-adopter motivators and where agricultural change can flourish	**UNIT 7 – RECOGNIZING THE "TIPPING POINT EFFECT"** Lesson 1: Basic soil chemistry datasets Lesson 2: Basics soil nutrient interactions and thresholds	**UNIT 7 – SOIL DEPOSITION: WHERE ALL THAT SOIL GOES!** Lesson 1: Factors affecting sediment deposition at the end of the transport stream Lesson 2: "Too little – too late" consequences of eroded sediments deposited in certain areas (wildlife habitat, ecosystem services, etc.)	**UNIT 7 – IMPLEMENTING PROGRAMS FOR PROTECTING SOIL AND WATER RESOURCES** Lesson 1: Illinois Nutrient Loss Reduction Strategy (ILNLRS) Lesson 2: Implementing INLRS, including farm leases benefitting from INLRS strategies
	UNIT 8 – MEASURING CONSERVATION CROPPING SYSTEMS' SUSTAINABILITY Lesson 1: Soil health testing and practice Lesson 2: Understanding conservation cropping advances and gains	**UNIT 8 – AGRICULTURAL DRAINAGE WATER MANAGEMENT – INTRODUCTION TO SYSTEM OPERATION AND MAINTENANCE** Lesson 1: Agricultural drainage water management, steps 1-3 Lesson 2: Agricultural drainage water management, steps 4-6	**UNIT 8 – AGRICULTURAL NUTRIENTS AND WATER QUALITY ISSUES** Lesson 1: Appraise and contrast nutrient management methods Lesson 2: Examining water quality issues (related to nutrient retention strategies)	**UNIT 8 – PARTICIPATORY AGRICULTURAL WATERSHED MANAGEMENT** Lesson 1: Rethinking the agricultural concepts of lack of abundance Lesson 2: Watershed planning, prioritization and management – developing quantitative expert systems	**UNIT 8 – ALL THAT "AGRICULTURAL BIG-DATA"… ARRIVING AT THOSE RIGHT CONCLUSIONS** Lesson 1: The soil interaction between nutrients and water (leaching and runoff) Lesson 2: The potential effect on yield based on leaching and runoff	**UNIT 8 – SEDIMENT LOSSES OTHER AGRICULTURE** Lesson 1: Differentiating agricultural sediments and all other forms of sediments Lesson 2: Sediments related to non-agricultural watershed management	**UNIT 8 – HOW TO DEVELOP AGRICULTURAL BEST MANAGEMENT PRACTICE PLANS** Lesson 1: Aggregating nutrient practices (farm owner BMP perspectives – the short and long terms) Lesson 2: Aggregating nutrient practices (farm operator BMP perspectives – the short and medium terms)