College of Agricultural Sciences and Natural Resources
Curriculum Committee
Summary of Actions
January 16, 2015

[1] Faculty Action

Unit Title and Number	Type of Action Requested Courses (new, revisions, deletions, ACE certification and recertification)	Approved CASNR	Approved CASNR Faculty	Approved UCC	Approved Graduate Council
AGRO 435 - Agroecology	**ACE 10 Recertification** **(ACE 10)[IS] AGRO 435/835. Agroecology** (HORT 435/835, NRES 435/835) (3 cr II) Lec 3. Prereq: For AGRO/HORT/NRES 435: Senior standing or permission. For AGRO/NRES 835: 12 hrs biological or agricultural sciences or permission. *Capstone course. Team projects for developing communication skills and leadership skills.* Integration of principles of ecology, plant and animal sciences, crop protection, and rural landscape planning and management for sustainable agriculture. Includes natural and cultivated ecosystems, population and community ecology, nutrient cycling, pest management, hydrologic cycles, cropping and grazing systems, landscape ecology, biodiversity, and socioeconomic evaluation of systems.	12/19/14 via email vote			
AGRO 479/879 - Applied Soil Physics	**New Course** **AGRO 479/879. Applied Soil Physics** (3 cr I) Lec 2, lab 1. Prereq: AGRO/HORT/SOIL 153 or equivalent; MATH 104 or MATH 106 or equivalent. Emphasis on applied soil physics. Discussion of theoretical principles followed by field and laboratory exercises and applications. Fluxes of water, solutes, air, and heat through the soil. Emphasis on water infiltration, water retention, other soil hydraulic properties. Components of soil water balance. Management of soil water.	1/16/15			
ALEC 165 - Pepsi Service Scholars	**ACE 8 Recertification** **(ACE 8) ALEC 165. Pepsi Service Scholars** (3 cr I) Lec 3. Prereq: Pepsi Scholarship for Outstanding Leadership and Service recipient. *ALEC 165 requires 2 to 3 hours per week of outside of class time in community service.* Civic and social responsibility through service-learning programming. Introduction to civic life, civic agent, and life-long service.	12/19/14 via email vote			

ASCI 490A - Animal Science Internship: Beef Feedlot Management	**Change of Credit Hours** **ASCI 490A. Animal Science Internship: Beef Feedlot Management** (1-3 cr, max 3) Fld. Prereq: ACCT 201; AECN 325 and 452; ASCI 422 and 457; and permission. Management internship in a beef feedlot. Organizational and financial structure of the beef feedlot and experience in making decisions related to: animal production, marketing, business management, and personnel management.	1/16/15			
ASCI 860 - Quantitative Genetics Applications of Matric Algebra	**New Course** **ASCI 860. Quantitative Genetics Applications of Matrix Algebra** (1 cr I) Lec 3. Prereq: Graduate Standing in the College of Agricultural Sciences and Natural Resources. *This is a five-week course taught by Lewis (UNL)* Principles in matrix algebra to describe and solve problems in the agricultural and life sciences, and particularly quantitative genetics. Material includes vocabulary, concepts, and, to a lesser extent, theory of matrix algebra, with application to ecological systems, genotypic transition matrices, selection indices, and the numerator relationship matrix. With matrix algebra, use least squares procedures and canonical transformation to solve problems in biological sciences.	1/16/15			
ASCI 861U - Primer to Quantitative Genetics	**New Course** **ASCI 861U. Primer to Quantitative Genetics** (1 cr II) Lec 3. Prereq: ASCI 860. *This is a five-week course taught by Lewis (UNL).* Language and foundational principles of quantitative genetics. Material includes basic model for quantitative genetics (additive and non-additive genetic effects, including Mendelian sampling, and environmental effects), sources of variation, heritability, family resemblance and repeatability, selection response, and family selection. Define expected values and concepts in applied statistics.	1/16/15			
ASCI 861V - Selection Index Theory and Application	**New Course** **ASCI 861V. Selection Index Theory and Application** (1 cr II) Lec 3. Prereq: ASCI 861U. *This is a five-week course taught by Lewis (UNL).* Theory and application of selection indices. Material includes design of animal breeding programs, estimating selection response, constructing economic selection indices, and developing multiple-stage selection strategies. Introduces approaches for deriving economic weights, and predicting economic response to selection.	1/16/15			

ASCI 861W - Economic Breeding Programs	**New Course** **ASCI 861W. Economic Breeding Programs** (1 cr II) Lec 3. Prereq: ASCI 861V. *This is a five-week course taught by MacNeil (Delta G) and Lewis (UNL).* Principles for developing an economic basis for multiple-trait selection to improve the profitability of production. Material includes review of concepts relevant to the selection index, introduction to the concept of systems analysis, linear programming, and simulation with emphasis on economic values useful for selection index. Critically analyze relevant literature.	1/16/15			
ASCI 862U - Linear Models in Animal Breeding	**New Course** **ASCI 862U. Linear Models in Animal Breeding (**1 cr I) Lec 3. Prereq: ASCI 861V. *This is a five-week course taught by Spangler (UNL).* Principles of linear models used in animal breeding. Models discussed in the context of the random variable that is to be predicted. Material includes animal models, sire/maternal grandsire models, and sire models, models with a single and repeated records, and models with both direct and maternal effects.	1/16/15			
ASCI 862V - Genetic Prediction	**New Course** **ASCI 862V. Genetic Prediction** (1 cr I) Lec 3. Prereq: ASCI 862U. *This is a five-week course taught by Enns (Colorado State University).* Principles for using best linear unbiased prediction (BLUP) in genetic prediction. *Material includes data integrity diagnosis, contemporary grouping strategies,* adjusting for known non-genetic effects, the AWK Programming Language, UNIX/Linux scripting, and use of modern computational tools to perform genetic evaluations. Emphasis on real-world datasets designed to develop applied analytical skills in animal breeding.	1/16/15			
ASCI 862W - Applied Variance Component Estimation in Livestock	**New Course** **ASCI 862W. Applied Variance Component Estimation in Livestock Genetics** (1 cr I) Lec 3. Prereq: ASCI 862V. *This is a five-week course taught by Speidel and Enns (Colorado State University).* Principles in the estimation of (co)variance components and genetic parameters required to solve mixed models typical in livestock genetics. Focus on applied knowledge of approaches used to estimate the G and R sub-matrices of the mixed model equations. Demonstrate models commonly used in parameter estimation. Introduce scientific literature concerning implementation, and attributes of the solutions, of variance component estimation strategies.	1/16/15			

ASCI 863U - Marker-Assisted and Gene-Assisted Selection	**New Course** **ASCI 863U. Marker-Assisted and Gene-Assisted Selection** (1 cr II) Lec 3. Prereq: ASCI 862V. *This is a five-week course taught by Enns (Colorado State University). Letter grade only.* Methods for incorporating genetic marker information into selection decisions in livestock. Consider statistical methodologies necessary to analyze large data available from new DNA technologies related to livestock genomes. Material includes recombination, single-gene tests, molecular breeding values, suggested producer guidelines for use of the technologies, and incorporation of genomic information into genetic prediction procedures.	1/16/15			
ASCI 863V - Introduction to Marker Association Analysis and QTL Detection	**New Course** **ASCI 863V. Introduction to Marker Association Analysis and QTL Detection** (1 cr II) Lec 3. Prereq: ASCI 863U. *This is a five-week course taught by Dekkers (Iowa State University).* Methodologies for using genetic markers to identify Quantitative Trait Loci (QTL) and for estimating marker-trait associations in livestock populations. Material includes the basics of linkage and linkage disequilibrium, alternate designs or population structures for QTL mapping, and statistical methods for QTL detection and genome-wide association analyses. Introduce properties and requirements of alternate designs and analysis strategies.	1/16/15			
ASCI 863W - From Markers to Gene Function: Functional Change	**New Course** **ASCI 863W. From Markers to Gene Function: Functional Change** (1 cr II) Lec 3. Prereq: ASCI 863V. *This is a five-week course taught by Thomas and Enns (Colorado State University).* Extend concepts of marker association analyses to the translation of genetic markers into functional changes in the animal genome, and impacts on animal performance, in livestock genetic improvement programs. Material includes introduction to the tools used to generate genomic data, and application of key bioinformatics websites and databases to identify causative genetic variation, and to develop gene pathways and networks	1/16/15			

ASCI 864 - CyberSheep: A Genetic Simulation Game	**New Course** **ASCI 864. CyberSheep: a Genetic Simulation Game** (1 cr I) Lec 2. Prereq: Graduate Standing. *This is a 10-week course taught by Lewis (UNL).* Principles of genetic selection and mating strategies applied in livestock breeding programs. Through use of a web-based genetic simulation game (CyberSheep), develop skills in implementing a virtual animal breeding program, assess the outcomes of decision-making in terms of genetic response, inbreeding, and economic returns, and experience stochastic elements inherent to livestock systems.	1/16/15			
ASCI 865 - History and Perspectives in Animal Breeding and Genetics	**New Course** **ASCI 865. History and Perspectives in Animal Breeding and Genetics** (1 cr I) Lec 3. Prereq: Graduate Standing. *This is a five-week course taught by Spangler and Lewis (UNL).* Historical perspective to the discipline of animal breeding and genetics. Introduction to the contributions of geneticists who have significantly impacted the discipline. Material includes pre-recorded interviews of scientists that have had an international impact in animal breeding and genetics. Critique key papers**.**	1/16/15			
ASCI 866 - Heterosis and Crossbreeding Systems	**New Course** **ASCI 866. Heterosis and Crossbreeding Systems** (1 cr II) Lec 3. Prereq: ASCI 861V. *This is a five-week course taught by Cassady (South Dakota State University).* Principles of heterosis and mating systems utilizing crossbreeding. Material includes models for breed and crossbreeding effects, genetic basis of heterosis, recombination effects, composite populations, estimation of crossbreeding parameters, applications of line breeding and line crossing, and evaluation and utilization of crossbreeding systems.	1/16/15			
ASCI 867 - Prediction and Control of Inbreeding in Breeding Programs	**New Course** **ASCI 867. Prediction and Control of Inbreeding in Breeding Programs** (1 cr I) Lec 3. Prereq: ASCI 862V. *This is a five-week course taught by Dekkers (Iowa State University).* Principles in the prediction and control of inbreeding in livestock breeding program. Material includes definition of inbreeding and identity by descent, impacts of inbreeding on genotype frequencies, trait means and variances, random drift, computation of inbreeding coefficients in pedigreed populations, prediction of rates of inbreeding in closed populations, and control and management of inbreeding in breeding populations.	1/16/15			

ASCI 868 - An Introduction to R Programming	**New Course** **ASCI 868. An Introduction to R Programming** (1 cr II) Lec 3. Prereq: Graduate Standing. *This is a five-week course taught by Maltecca (North Carolina State University).* Introduction to the R environment for statistical computing, including use of R as a high-level programming language and as a gateway for more formal low-level languages. Material includes language structure, basic and advanced data manipulation, statistical analysis with R, and using R as a programming language**.**	1/16/15			
ASCI 869 - NCMC Methods in Animal Breeding: A Primer	**New Course** **ASCI 869. MCMC Methods in Animal Breeding: A Primer** (1 cr II) Lec 3. Prereq: ASCI 868. *This is a five-week course taught by Maltecca (North Carolina State University).* Principles of Markov Chain Monte Carlo (MCMC) methods in animal breeding. Materials include random variable generation, Monte Carlo integration, stochastic search, Expectation-maximization (EM) algorithm and Monte Carlo EM, Markov Chain principles, Metropolis-Hastings algorithm, Gibbs sample, and MCMC for genomic data. Illustrations developed using R software.	1/16/15			
MSYM 162 - Introduction to Mechanized Systems Management	**Change of Credit Hours and Description** **MSYM 162. Introduction to Mechanized Systems Management** (1 cr I) Lec 1. Basic principles of describing and evaluating mechanized systems relevant to agriculture, food, energy, and water. Problem solving using systems-thinking. Exploration of major and career opportunities. Academic success and planning.	1/16/15			
MSYM 232 - Equipment Principles	**Change of Title, When Offered, and Description** **MSYM 232. Power and Machinery Principles** (3 cr I) Lec 2, lab 3. Prereq: MSYM 109 or general physics. Operational characteristics of IC engines, field, materials-handling, and processing machines and their components. Includes analyses, estimations, and objective comparisons of performance; principles for adjustment and calibration of metering systems; and cost-effective sizing of machines. Exercises include using ASABE Standards and available reports of machine performance (tractor test reports, etc.).	1/16/15			
MSYM 262 - Problem Solving in Mechanized Systems Management	**New Course** **MSYM 262. Problem Solving in Mechanized Systems Management** (1 cr II) Lec 1. Prereq: MATH 102, MSYM 109 or PHYS 141, PHYS 151, or PHYS 211. Open to MSYM majors only. Use of computational tools to solve problems relevant to mechanized systems management. Professional communication of technical information. Discussion of current and emerging issues relevant to the major.	1/16/15			

NRES 245 - Introduction to Grassland Ecology and Management	**New Course** **NRES 245. Introduction to Grassland Ecology and Management** (AGRO 245) (3 cr II) Lec 3. Prereq: AGRO 153 Grassland ecology and management is relevant to students with education and career goals in managing natural resources in Nebraska and the Great Plains. About 50% of the land area in Nebraska is classified as grassland (or rangeland) and is the land type with the most opportunity for enhancing biodiversity and wildlife habitat. Applying ecological principles and social values to managing rangeland resources, students will develop a knowledge and appreciation for the various grassland management uses and techniques available to resource managers.	1/16/15			
NRES 803 - Ecological Strategies	**Change of Delivery** **NRES 803. Ecological Statistics (STAT 803)** (4 cr) Lec 3, lab 1. Prereq: STAT *801 or equivalent. *This course available online only.*. Model-based inference for ecological data, generalized linear and additive models, mixed models, survival analysis, multi-model inference and information theoretic model selection, and study design.	1/16/15			
WATS 481/881 - Stream and River Ecology	**New Course** **WATS 481/881. Stream and River Ecology (BIOS 481, NRES 481)** (4 cr I) Lec 3, lab 1. Prereq: NRES 222 or equivalent. Fundamental physical drivers operating in stream and river ecosystems and how those vary in space and time. Major classes of organisms associated with stream ecosystems and their functional roles. Fundamental controls on biotic diversity in stream and river ecosystems and its variance. Major aspects of stream ecosystem function including energy flow and nutrient cycling. Ecosystem services provided by stream and river ecosystems and causes and consequences of human impacts on streams and rivers. Underlying principles of bioassessment and current methods of stream restoration.	1/16/15			
Curriculum Committee Approval Only: Substitution/waivers, student appeals, bulletin copy (format, consistency, accuracy, editorial), operating procedures for the curriculum committee					
The Environmental Studies degree program was revised and entered into the Bulletin copy by the December 15th deadline.					
Informational Items: Tabled items, calendar of meetings and deadlines, changes in membership, program changes in degree program that do not include the college core, ACE assessment reports					

[1] If you have specific questions or concerns; please visit with your CASNR Curriculum Committee Representative to discuss the specific agenda item.

Any unit or group of at least five (5) faculty may challenge a decision of the Committee that requires faculty action by filing a written objection. The unit

administrator will coordinate the written response to the Dean by February 3, 2015. Unless the concerns can be resolved with clarification, revision and/or withdrawal and re-submission, the matter in question will be brought before the full faculty for discussion, debate and vote. If no written objections are properly filed, the action will be considered approved by the College faculty and either implemented or forwarded to the appropriate University Committee (University Curriculum Committee, Graduate Council and/or Academic Planning Committee) with the faculty recommendation for approval.

[2] The CASNR Curriculum Committee serves as the Parent Unit for the following degree programs:
B.S. in Applied Science, B.S. in Forensic Science, B.S. in Integrated Science, Master of Applied Science and Doctor of Plant Health.

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No approval needed