AGRICULTURAL MECHANIZATION

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AGM 1010 Introduction to Agricultural Mechanization and Business (3) Introduces the Agricultural Mechanization and Business program. Gives an overview of the curriculum, introduces students to relevant extracurricular activities, exposes students to employment opportunities through alumni and interns, and helps students to prepare for careers relevant to the major.

AGM 2050 Principles of Fabrication (3) Principles, techniques, and methods in the selection, proper use, and maintenance of hand and power tools. Principal topics include welding, tool fitting, metalworking, woodworking, finishing and preserving, and heat treatment. Coreq: AGM 2051.

AGM 2051 Principles of Fabrication Laboratory (0) Non-credit laboratory to accompany AGM 2050. Coreq: AGM 2050.

AGM 2060 Machinery Management (3) Teaches agriculture students to apply physical principles and sound reasoning to the mechanization of modern agricultural production and processing enterprises. Stress planning efficient operational systems and wise selection of equipment, based on function and economic suitability. Preq or concurrent enrollment: MATH 1020 or MATH 1060; and PHYS 2000 or PHYS 2070. Coreq: AGM 2061.

AGM 2061 Machinery Management Laboratory (3) Non-credit laboratory to accompany AGM 2060. Coreq: AGM 2060.

AGM 2190 Agribusiness and Food Systems (3) Provides a general introduction to the major activities associated with the movement of agricultural and food products from producers to consumers and the essential supply chain functions of buying, selling, transportation, storage, financing, standardization, pricing and risk bearing. Preq: MATH 1020 or MATH 1060.

AGM 2200 Calculations for Mechanized Agriculture (3) Enhances students' ability to analyze and solve a wide range of problems requiring engineering technology. Laboratory periods introduce students to microcomputer hardware. Basic programming and typical applications to agricultural mechanization problems are included. Preq or concurrent enrollment: PHYS 1220 or PHYS 2000 or PHYS 2070. Coreq: AGM 2201.

AGM 2201 Calculations for Mechanized Agriculture Laboratory (0) Non-credit laboratory to accompany AGM 2200. Coreq: AGM 2200.

AGM 2210 Surveying: Earthwork and Area Measurements (3) Fundamentals of surveying relative to earthwork and land area measurements, including linear measurements, leveling, angular measurements, and computations. Levels and total stations are used with an introduction to GPS. Preq or concurrent enrollment: MATH 1020 or MATH 1060. Coreq: AGM 2211.

AGM 2211 Surveying: Earthwork and Area Measurements Laboratory (0) Non-credit laboratory to accompany AGM 2210. Coreq: AGM 2210.

AGM 3010 Soil and Water Conservation (3) Soil and water management is studied by applying principles of mathematics, fluid flow, hydrology, and soil characteristics as related to soil-water-vegetation complexes in runoff, erosion control, channel design, water conservation, drainage, stormwater and management practices and stream restoration. Preq or concurrent enrollment: MATH 1020 or MATH 1060.

AGM 3021 Calculations for Mechanized Agriculture Laboratory (0) Non-credit laboratory to accompany AGM 3030. Coreq: AGM 3030.

AGM 3190 Agribusiness Decision Analysis (3) Improvement of the decision-making process in agricultural businesses through the use of decision-analysis software. Students build their own decision-making models using spreadsheets. Preq: AGM 2190 or AGRB 3020 or AGRB 3190 or MGT 2010.

AGM 3710 Agricultural Mechanization Practicum (1-3) Pre-planned internship with an approved employer involved in agricultural technical or business endeavors. 130 hours of supervised responsibility are required per credit hour. A work journal, written/oral reports, company consent and evaluation must be on file. May be repeated for a maximum of twelve credits. To be taken Pass/No Pass only.

AGM 4000 Senior Seminar in Agricultural Mechanization and Business (1) Seminar and project-based course providing information on a variety of topics such as the development of professionals in agricultural mechanization and business and in agricultural education. Topics include selection of a professional resume and related information, current topics related to agricultural technology and systems management. Preq: Junior or senior standing in Agricultural Mechanization and Business or in Agricultural Education.

AGM 4020 Irrigation System Design (3) Uses basic soil-water-plant relationships to determine the need for and methods of irrigation and drainage. Topics include irrigation methods, irrigation requirements, system components including pipe, pump, and system design. Preq: Junior standing. Coreq: AGM 4021.

AGM 4021 Irrigation System Design Laboratory (0) Non-credit laboratory to accompany AGM 4020. Coreq: AGM 4020.

AGM 4050 Environmental Control in Animal Structures (3) Design of environmental control systems for animal production facilities. Topics include effects of the thermal and chemical environment on animals, ventilation system design, thermal design of structural envelopes, design of heating, cooling, and lighting systems. Emphasis is on practical, energy-efficient applications to modern animal production facilities. Preq: AGM 2190 and AGM 2200. Coreq: AGM 4051.

AGM 4051 Environmental Control in Animal Structures Laboratory (0) Non-credit laboratory to accompany AGM 4050. Coreq: AGM 4050.

AGM 4060 Mechanical and Hydraulic Systems (3) Study of power transmission systems for agricultural production emphasizing mobile equipment. Characteristics, requirements, and design of both V-belt drive and roller-chain drives are presented. Emphasizes hydraulic power transmission systems, including pumps, actuators, control devices, and hydraulic circuitry. Preq: AGM 2060; and PHYS 1220 or PHYS 2000 or PHYS 2070. Coreq: AGM 4061.

AGM 4061 Mechanical and Hydraulic Systems Laboratory (0) Non-credit laboratory to accompany AGM 4060. Coreq: AGM 4060.

AGM 4100 Precision Agriculture Technology (3) Includes principles and hands-on application of technologies supporting precision agriculture. Topics include global positioning system (GPS), geographic information system software, variable rate technologies, collection of spatial data, automated guidance of equipment, spatial data mapping and analysis, remote sensing, and economic considerations. Preq: Junior standing. Coreq: AGM 4101.

AGM 4101 Precision Agriculture Technology Laboratory (0) Non-credit laboratory to accompany AGM 4100. Coreq: AGM 4100.

AGM (ELE) 4190 Agribusiness Innovation and Entrepreneurship (3) Emphasis on assessing students' abilities as agribusiness entrepreneurs, evaluating the feasibility of a business idea, creating strategies for organizing and marketing the agricultural business, exploring pricing for products or services, developing capital needs and sound financial statements, and researching, developing, and writing a comprehensive plan for the business. Preq: AGM 2190 or AGRB 3190 or AGRB 3020 or AGRB 3190 or MGT 2010. May also be offered as ELE 4190.

AGM 4520 Mobile Power (3) Study of tractors, emphasizing internal combustion engines and support systems necessary for their proper functioning. Also considers application of power, maintenance, adjustment, and general repair. Preq: PHYS 1220 or PHYS 2000 or PHYS 2070. Coreq: AGM 4521.

AGM 4521 Mobile Power Laboratory (0) Non-credit laboratory to accompany AGM 4520. Coreq: AGM 4520.

AGM 4600 Electrical Systems (3) Students in agriculture and related curricula study electric and other utilities on the farm and in the home. Emphasizes selection, installation, and maintenance of wiring systems, lighting systems, motors, controls, water systems, and waste disposal systems. Preq: AGM 2200 and junior standing. Coreq: AGM 4601.

AGM 4601 Electrical Systems Laboratory (0) Non-credit laboratory to accompany AGM 4600. Coreq: AGM 4600.

AGM 4720 Capstone (3) Covers professional conduct, ethics, oral and written communication, and financial matters. Each student completes a comprehensive project on a technical subject. The results are given in a written report and oral presentation. Students use digital portfolio technology to assess their education. Preq: AGM 3010 and AGM 4000 and AGM 4020 and AGM 4050 and AGM 4060, AGM 4520 and AGM 4600. Coreq: AGM 4721.
AGRM 4721 Capstone Laboratory 0(3) Non-credit laboratory to accompany AGRM 4720. Coreq: AGRM 4720.

AGRM 4730 Special Topics in Agricultural Mechanization 1-3(1-3) Comprehensive study and application of new technologies and methods not covered in existing courses. Emphasizes independent study using innovative approaches to problem solving. May be repeated for a maximum of six credits.

AGRB 2020 Agricultural Economics 3(3) Analytical survey of the various subdivisions of agricultural economics, including farm organization, enterprise, land economics, marketing, farm prices, governmental farm policies, and the relation of agriculture to the national and international economy.

AGRB 2050 Agriculture and Society 3(3) Introduction to the development of world society focusing on food production, from early hunting and gathering to modern biotechnology. Covers factors driving societal growth with a global perspective. Explores systematic impacts of growth in technical capacity to produce agricultural products on farm and community organization, industrialization, and the global economy.

AGRB 3020 Economics of Farm Management 3(3) Economic principles underlying the organization and operation of agricultural firms and related business enterprises. Particular emphasis is placed on management aspects of the farm as a production unit. Prereq: AGRB 2020 or ECON 2110.

AGRB 3080 Quantitative Agribusiness Analysis I 3(3) Focuses on the integration and use of introductory statistics, mathematics and microeconomic theory as agribusiness decision tools. Profit maximization and cost minimization problems are solved in risky and riskless situations. Regression procedures are used to estimate economic parameters. Expected profit and risk tradeoffs are examined. Prereq: AGRB 2020 or ECON 2110; and MATH 1020 or STAT 2300.

AGRB 3090 Economics of Agricultural Marketing 3(3) General course in marketing agricultural commodities with particular emphasis upon food products. Analyzes efficiency criteria, consumer behavior, market organizations and institutions, and marketing functions. Includes Honor sections. Prereq: AGRB 2020 or ECON 2000 or ECON 2110.

AGRB 3130 Principles of Real Estate Appraisal 3(3) Introduction to basic principles and procedures of real estate appraisal. Topics include the real estate market, principles of valuation, legal concepts, and the application of the comparable sales, cost, and income approaches to real estate valuation. Prereq: FIN 3070.

AGRB 3190 Agribusiness Management 3(3) Study of the principles used in making management decisions and the application of these principles in agribusiness. Emphasizes the application of economics to the solution of problems facing managers of agricultural supply and marketing firms. Prereq: AGRB 3020.

AGRB 3510 Principles of Advertising 3(3) Introduction to the various functions of advertising; research and audience analysis; various media formats; planning, research, and production necessary to create an advertising campaign; social effects, economic effects, and ethical considerations of advertising. Prereq: AGRB 2020.

AGRB 3520 Public Finance 3(3) Principles of financing government, sources of public revenue, objects of public expenditure, problems of fiscal administration, and the application of fiscal policies in stabilizing the national economy. Prereq: Junior standing.

AGRB 3570 Natural Resources Economics 3(3) Principles and problems involved in the use of soil, water, forest, and mineral resources, with special emphasis on economic aspects of alternative methods of resource utilization. Prereq: AGRB 2020 or ECON 2000 or ECON 2110.

AGRB (HLTH) 3610 Introduction to Health Care Economics 3(3) Introductory course in which students learn the basic economics of the institutions comprising the health-care industry. Topics include the underlying supply, demand, and institutional factors impacting health-care availability and cost of health care. May also be offered as HLTH 3610.

AGRB 4020* Production Economics 3(3) Economic analysis of agricultural production involving the concept of the farm as a firm; principles for decision making; the quantitative nature and use of production and cost functions and the interactions and applications of these principles to resource allocation in farms and among areas. Prereq: AGRB 3080; and ECON 3060 or ECON 3140.

AGRB 4080 Quantitative Agribusiness Analysis II 3(3) Regression analysis, linear programming, and risk efficiency analysis techniques are presented and applied to agribusiness firms to improve firm economic efficiency. Microcomputer optimization and statistical software packages are utilized to develop firm level strategic plan to achieve efficient agribusiness outcomes in uncertain economic environments. Prereq: AGRB 3080.

AGRB 4090* Commodity Futures Markets 3(3) Introduction to the economic theory, organization, and operating principles of agricultural commodity futures markets in the United States. Emphasizes speculative, hedging, and investing in agricultural commodity futures contracts from the standpoint of the agribusiness entrepreneur. Prereq: AGRB 3090.

AGRB 4110* Regional Impact Analysis 3(3) Techniques for analysis of the growth and decline of regions, including economic base theory, shift share, regional input-output, regional econometric models, and fixed impact models. Prereq: AGRB 2020; or both ECON 2110 and ECON 2120.


AGRB 4130* Advanced Real Estate Appraisal 3(3) Topics include highest and best use analysis, data collection, and analyses. Stresses advanced appraisal procedures for income, cost, and comparable sales approach to real estate valuation. Covers eminent domain, the appraisal of property in transition, and specialized property. Prereq: AGRB 3130 or FIN 3070.

AGRB 4210* Globalization 3(3) Utilizes basic principles of international economics (comparative advantage, free trade versus protectionism, exchange rate determination, etc.) to analyze the contemporary problems and issues of the world economy. Emphasizes application of economic principles to current globalization trends. Prereq: AGRB 2020 or ECON 2000 or ECON 2110.

AGRB (PES) 4260* Cropping Systems Analysis 3(2) Application of agronomic and economic principles in solving problems related to the production and marketing of agronomic crops. Major part of the course is a case study in which detailed analysis of a farm, agribusiness, or environmental situation is made with students making formal written and oral presentations of results. May also be offered as PES 4260. Prereq: PES 1040; and Junior standing; and AGRB 2020 or ECON 2000 or ECON 2110. Coreq: AGRB 4261.

AGRB (PES) 4261* Cropping Systems Analysis Laboratory 0(1) Non-credit laboratory to accompany AGRB 4260. May also be offered as PES 4261. Coreq: AGRB 4260.

AGRB 4520* Agricultural Policy 3(3) Review of public agricultural policy programs in the United States and a critical examination of current and proposed government policies and programs affecting the agricultural sector of the economy. Includes economic considerations as related to past and current farm price and income problems. Includes Honor sections. Prereq: AGRB 2020 or ECON 2000 or ECON 2110.

AGRB 4560* Prices 3(3) Review of the basic theory of price under competitive conditions and various modifications; nature, measurement, and causes of daily, seasonal, and cyclical price fluctuations; geographical price relationships; nature, function, and behavior of futures markets; government price programs. Includes Honor sections. Prereq: AGRB 3080 or ECON 4050; and ECON 3060 or ECON 3140.

AGRB (ECON) 4570* Natural Resource Use, Technology and Policy 3(3) Focuses on economic analyses of actual, efficient, and sustainable uses of natural resources, impacts of technologies that affect these uses, and policies that affect development and use of such technologies. Resource-technology-policy combinations may vary, but an example is crude oil, hybrid automotive engines, and fuel economy standards. May also be offered as ECON 4570. Prereq: MATH 1020 or MATH 1060; and AGRB 2020 or ECON 2000 or ECON 2110.

AGRB (ECON) 4570* Regional Impact Analysis 3(3) Techniques for analysis of the growth and decline of regions, including economic base theory, shift share, regional input-output, regional econometric models, and fixed impact models. Prereq: AGRB 2020; or both ECON 2110 and ECON 2120.

AGRB 4600* Agricultural Finance 3(3) Study of the principles and technique of financing in the agricultural sector. Topics include the capital structure in agriculture, concepts of farm financial management, use of credit, capital markets, lending agencies, and estate planning. Prereq: ACCT 2010; and AGRB 2020 or ECON 2000 or ECON 2110.