Code # AG09

**Bulletin Change Transmittal Form**

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| **Bulletin Change** Please attach a copy of all catalogue pages requiring editorial changes. |

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (If applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |

**1.Contact Person** (Name, Email Address, Phone Number)

Rajesh Sharma, [rsharma@astate.edu](mailto:rsharma@astate.edu), 972-2270

**2.Proposed Change**

Delete TECH 1423, Beginning Solid Modeling Key Creator II, TECH 2803, Computer Aided Drafting and Design II, TECH 3423, Intermediate Solid Modeling Key Creator II, TECH 3463 Advanced Pro Engineer, TECH 4003, ACAD 2D, TECH 4083, Mastercam II. Remove the sentence “select nine of the following. Add TECH 4743 Computer Numeric Control, and TECH 4873, Motion and Time Study under Emphasis Area. All the classes should be listed individually in the degree plan, with 3 hours for each course.

**3.Effective Date**

1/15/2014

**4.Justification**

TECH 1423, Beginning Solid Modeling Key Creator II, TECH 2803, Computer Aided Drafting and Design II, and TECH 3423, Intermediate Solid Modeling Key Creator II were already deleted from the list of courses in the 2013-14 bulletin. However, they were not removed from degree plans due to oversight. TECH 3463 Advanced Pro Engineer, TECH 4003, ACAD 2D, TECH 4083, Mastercam II are being deleted to consolidate the course offerings and make them more manageable. None of these courses have not been offered in past three years. The sentence “select nine of the following” needs to be deleted since all the courses under Emphasis area would be required courses now. TECH 4873, Motion and Time Study replaces one of the deleted CADD courses under emphasis area requirements. It does not add to the course requirement. In past most of the CADD emphasis area students took TECH 4743, Computer Numeric Control as an elective. TECH 4743 was added in the CADD emphasis curriculum and is already in course list. It was left out of the degree plan by oversight.

**From the most current electronic version of the bulletin, copy all bulletin pages that this proposal affects and paste it to the end of this proposal.**

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**Major in Technology**

**Bachelor of Science**

**Emphasis in Computer Aided Drafting and Design**

A [complete 8-semester degree plan is available at http://registrar.astate.edu/.](http://registrar.astate.edu/)

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| **University Requirements:** |  |
| See University General Requirements for Baccalaureate degrees (p. 40) |  |
| **First Year Making Connections Course** | **Sem. Hrs.** |
| AGRI 1213, Making Connections in Agriculture | **3** |
| **General Education Requirements:** | **Sem. Hrs.** |
| See General Education Curriculum for Baccalaureate Degrees (p. 82)  **Students with this major must take the following:**  *SCOM 1203, Oral Communication (Required Departmental Gen. Ed. Option)* | **35** |
| **Major Requirements:**  Grade of “C” or better required for all Major Requirements | **Sem. Hrs.** |
| CIT 3013 Management Information Systems | 3 |
| ENG 3043, Technical Writing | 3 |
| MGMT 3153, Organizational Management **OR**  Sociology Elective **OR**  Psychology Elective | 3 |
| RET 3113, Fund. Applications of Renewable Energy | 3 |
| TECH 3773, Statistics | 3 |
| TECH 3863, Industrial Safety | 3 |
| TECH 4813, Operations Systems Research | 3 |
| TECH 4823, Quality Assurance | 3 |
| TECH 4853, Lean 6 Sigma for Manufacturing | 3 |
| TECH 4883, Work Center Management | 3 |
| **Sub-total** | **30** |
| **Emphasis Area (Computer Aided Drafting and Design):**  Grade of “C” or better required for all Emphasis Area Requirements | **Sem. Hrs.** |
| MATH 1033, Plane Trigonometry | 3 |
| TECH 2453, Technology Design - Solid Works I | 3 |
| TECH 2863, Principles of Technology | 3 |
| TECH 3843, Manufacturing Materials and Processes | 3 |
| **TECH 4873, Motion and Time Study** | **3** |
| **~~Select nine of the following:~~**  ~~TECH 1423, Beginning Solid Modeling Key Creator II~~  ~~TECH 2803, Computer Aided Drafting and Design II~~  TECH 3413, AutoCAD / Inventor  TECH 3403, Pro Engineer  ~~TECH 3423, Intermediate Solid Modeling Key Creator II~~  TECH 3433, AutoCAD 3-D Modeling  TECH 3453, Advanced Technology Design - Solid Works II  TECH 3473, Structural Drafting  TECH 3853, Computer Aided Manufacturing (CAM)  TECH 3873, Tool Design  ~~TECH 4003, ACAD 2D~~  ~~TECH 4083, Mastercam II~~  TECH 4743, Computer Numeric Control | ~~27~~  3  3  3  3  3  3  3  3 |
| **Sub-total** | **39** |
| **Electives:** | **Sem. Hrs.** |
| Electives | **13** |
| **Total Required Hours:** | **120** |
| The bulletin can be accessed at http://www.astate.edu/a/registrar/students/ |  |
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**RET 4023. Advanced Bioenergy** A study of processes and developments in the biofuels and other emerging technology for biobased energy products. Prerequisites, MATH 1023, CHEM 1013, CHEM 1011 and RET 3113, or approval of instructor. Fall.

**RET 4113. Advanced Renewable Energy Systems** A study of renewable energy systems including technologies for solar, hydrogen, fuel cell, biomass and wind. Prerequisites MATH 1023, CHEM 1013, CHEM 1011 and RET 3113, or approval of instructor. Spring.

**RET 4123. Energy Conservation and Efficiency** A study of energy and power measurement techniques to analyze energy use, and methods to conserve energy in residential and industrial sectors. Prerequisites, MATH 1023, PHYS 2054, CS 1013 and RET 3113; or approal of instructor. Fall.

**RET 4313. Wind Energy Technology** A study of wind energy fundamentals and processes for converting wind power with emphasis on turbines and the wind power systems. Prerequisites, PHYS 2054, MATH 1023, and RET 3113; or approval of instructor. Spring.

**Technology (TECH)**

**TECH 2453. Technology Design Solid Works I** Drawing and detailing with SolidWorks, a design automation software package used to produce parts, assemblies and drawing. Fall.

**TECH 2863. Principles of Technology** The role and function of technology development in hu­man resources. Course provides an introduction to the concepts and philosophies of the technical work place and the use of technologies. Fall.

**TECH 3403. Pro ENGINEER** A study of types of parent and child relation using constraints in CAD and CAM. Prerequisites, TECH 2453. Fall.

**TECH 3413. AutoCAD Inventor** This is a beginning level 1 course in CAD. This course is designed to demonstrate how AutoCAD is used in model parametric space. This course will only deal with 2d mechanical, electrical and civil aspects of CAD. Prerequisite, TECH 2453. Fall.

**TECH 3433. AutoCAD 3D Modeling** This is an Advance level II course in CAD. This course is designed to demonstrate how to manage 3D space, how to make 3D sire frame, surface, and solid models, how to modify them, and how to display them. Prerequisite, TECH 3413. Spring, even.

**TECH 3453. Advanced Technology Design Solid Works II** Continuation of Technology Design, SolidWorks I. Prerequisite, TECH 2453. Spring, odd.

**~~TECH 3463. Advanced Pro Engineer~~** ~~A study of advanced techniques and workarounds type of parent and child relation using constraints. Prerequisites, ME 2502 and TECH 3403. Spring, odd.~~

**TECH 3473. Structural Drafting** Structural steel drafting is used to construct and design sup­port frames for modern commercial and industrial buildings. Special emphasis is placed on how structural drafters in both structural design and fabrication offices prepare the working drawings required to help transform the architects vision into reality. Prerequisite, TECH 2453. Fall, odd.

**TECH 3713. Fiscal Aspects** An introduction to fiscal structures and problems encountered in the technically oriented enterprise. Fall.

**TECH 372V. Technical Career Subjects** Through this course students having work experience and company sponsored training will undergo portfolio assessment to determine credit hour award. Course may be repeated. No more than 25% of the degree may be satisfied with this course and TECH 189V. 1 to 9 hours. Fall, Spring.

**TECH 3753. Legal Aspects** An introduction to the types of legal problems encountered in the technically oriented enterprise. Spring, even.

**TECH 3773. Statistics** Basic concepts and methods of statistics in a technical environment, including descriptive statistics, significant tests, estimation, sampling and correlation. Fall.

The bulletin can be accessed at <http://www.astate.edu/a/registrar/students/>

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**TECH 3803. Electrical Systems** Fundamentals and utilization of electric power through appropriate units of equipment and systems for heating, cooling, working, and controls, energy transmission and measurements, equipment selection, operation, maintenance, and evaluation for given tasks. Prerequisite, MATH 1033. Fall.

**TECH 3813. Programmable Logic Control** Introduction to programmable logic controllers. Top- ics will include programming basics, instruction sets, maintenance and trouble shooting, program editing and the use of EEPROM memory modules. Prerequisite, TECH 3803. Spring.

**TECH 3823. Mechanics I** Introduction to statics and dynamics at the technologists level. Topics will include resultants and equilibrium of force systems, friction centroids, moments of inertia, plane motion, working energy. Prerequisite, MATH 1033. Fall.

**TECH 3843. Manufacturing Materials and Processes** Structure and properties of metals and other materials used in manufacturing. Formation, treatment, and modification of materials through manufacturing processes. Advantages and disadvantages of alternative materials and processes for specific applications. Important emerging technologies. Prerequisite, CHEM 1003 or high school chemistry and MATH 1033. Spring, odd.

**TECH 3853. Computer Aided Manufacturing CAM** A study of 3D CAM software package that prepares NC programs for complex shapes and surfaces, basic contouring, drilling pocketing and geometric creations, including splines, ellipses, and lettering. Prerequisite, Keycreator experience. Spring, even.

**TECH 3863. Industrial Safety** An introduction of the basic concepts of safety and health. Topics include the role of the safety professional, social, legislative, and regulatory requirements as well as the concepts of hazard recognition, evaluation, and control. Fall.

**TECH 3873. Tool Design** Application of the theory developed in the fundamental technology courses to the design and fabrication of jigs, fixtures, and dies. Prerequisites or corequisites, TECH

2453 or TECH 3413. Fall.

**TECH 3883. Machine Design** Application of the theory developed in the fundamental technol- ogy courses to the design and selection of machine components such as journal and antifriction bearings, shafts, couplings, cams, gears, belts, chains, clutches, brakes, fasteners, and springs. Corequisite, TECH 3833. Spring, odd.

**TECH 389V. Occupational Internship** This course provides the student with an opportunity to obtain additional experience in their emphasis area. Course may be repeated. Maximum degree credit for this course is three hours. Advisors approval is required. 1 to 3 hours. Fall, Spring, Sum- mer.

**~~TECH 4003. ACAD 2D~~** ~~2D Fundamentals of ACAD, Computer-Aided Design and Drafting (CADD).~~

~~Provides students with knowledge and skills to construct basic shapes and make multiview draw- ings using a hands on approach. Spring, even.~~

**~~TECH 4083. Mastercam II~~** ~~Introduction to the concepts and practices of CAM and Machine~~

~~Protocol with focus on personal application. Spring, odd~~.

**TECH 4703. Experiential Learning Practicum** This capstone course provides students with experiential learning related to their emphasis area, as an on the job position within a company or other approved location. Each Practicum will involve 10 to 12 specific learning experience objec- tives. Prerequisites, Approval of faculty supervisor. Restricted to majors in the Technology majors. Fall, Spring, Summer.

**TECH 4743. Computer Numeric Control** Basic terminology for computer aided manufacturing, interpretation of mechanical drawings in manufacturing, and learn manual G Code programming. Prerequisites, MATH 1033 and TECH 2453. Fall, even.

**TECH 4783. Manufacturing** Concepts and philosophies of manufacturing technology and their

roles in factories. Prerequisite, Senior Standing in Technology. Fall.

**TECH 480V. Current Topics in Technology** This course is designed to address specific needs of technology or industry. May be repeated for credit. 1 to 3 hours. Summer.

**TECH 4813. Operations Systems Research** Quantitative techniques for decision making, break even analysis, economic models, gaussian distributions, inventory control, production models, and mathematical programming. Prerequisite, MATH 1023. Fall.

*The bulletin can be accessed at* [*http://www.astate.edu/a/registrar/students/*](http://www.astate.edu/a/registrar/students/)

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