Code # AG10

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 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**

Change in course rotation/offering frequency of TECH 3403, Pro ENGINEER, TECH 3433, AutoCAD 3-D Modeling, TECH 3453, Advanced Technology Design - Solid Works II, TECH 3473 Structural Drafting, TECH 3753 Legal Aspects, TECH 3803 Electrical Systems, TECH 3843 Manufacturing Materials and Processes, TECH 3873 Tool Design, TECH 4743 Computer Numeric Control, TECH 4783, Manufacturing, TECH 4873 Motion and Time Study.

**3.Effective Date**

1/15/2014

**4.Justification**

Change in course rotation/offering frequency is required due to deletion/consolidation of courses.

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**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~~**. **Spring odd**

**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~~., **even**

**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~~,Spring** 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~~, Fall,** even.

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

**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~~ Spring**.

**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.**even**

**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~~. **odd**

**TECH 4783. Manufacturing** Concepts and philosophies of manufacturing technology and their roles in factories. Prerequisite, Senior

Standing in Technology. Fall, **even**.

**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.

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*401*

**TECH 4823. Quality Assurance** The principles and practices of quality in manufactured products. Familiarization with industrial methods and equipment used in quality assessment. Basic topics include histograms, Pareto diagrams, control charts, acceptance sampling, process capability, cause and effect diagrams, reliability, visual inspection, and the relationship between quality and cost. Prerequisite, TECH 3773 or TECH 2883. Spring.

**TECH 4843. Labor Relations** Course will present the economic situation in which labor manage­ment problems operate in a technological environment. The course will cover the development of labor relations and collective bargaining techniques used by labor and management in their ongoing interactions in the technical work place. Spring.

**TECH 4853 Lean 6 Sigma for Manufacturing** Principles of Lean Manufacturing including strategies to eliminate waste and reduce coste, and continuous quality improvement using the principle of Six Sigma; advanced quality assurance terminology and appplication of statistical practices in manufacturing management. Prerequisite, TECH 3773. Prerequisite or corequisite, TECH 4823. Spring.

**TECH 4873. Motion and Time Study** Principles and practices of motion and time study including process charts, operation charts, motion summary, and time standards. Spring, ~~even~~.

**TECH 4883. Work Center Management** A survey course that addresses the problems of man­aging a small working unit, such as a department, within a larger unit, such as a company. Topics to be addressed include, goal identification, staffing needs, monitoring of work process reporting, work center communications, and interpersonal relations within the work center. Spring.

**TECH 489V. Special Problems in Technology** Individually directed problems in technology for juniors and seniors. Must be arranged in consultation with a technology faculty member and ap­proved by the department chair. Fall, Spring, Summer.

**Teaching Internship (TIAG)**

**TIAG 4825. Agricultural Teaching Internship in the Secondary School** Ten semester hours. Full semester teaching internship. Fall, Spring.

**TIAG 4826. Agricultural Teaching Internship in the Secondary School** Twelve semester hours. Full semester teaching internship. Fall, Spring.

**Technical and Vocational Education (VOED)**

**VOED 1503. Instructional Planning and Materials in Technical and Vocational Education** Pro­vides knowledge and procedures for the development of instructional units, the preparation of lesson plans, and the selection and preparation of instructional materials necessary to teaching in a technical or vocational setting. Demand.

**VOED 1513. Methods of Technical and Vocational Teaching** Methods of teaching are introduced and studied, with emphasis on the application of those methods in a technical or vocational school setting. Demand.

**VOED 1533. Student Services in Technical and Vocational Education** The role of student organizations in the technical or vocational program is studied, with emphasis on the establishment and operation of a student organization as an integral component of a technical or vocational school program. Demand.

**VOED 1543. Evaluation of Learning** Methods for measuring student learning, determining letter grades, and evaluating overall instructional effectiveness as applied to a technical or vocational setting are presented. Demand.

**VOED 1553. Management of Technical and Vocational Programs** Various management tasks essential to effective technical and vocational instruction and program development are presented and studied with emphasis on their application in a technical or vocational school setting. Demand

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402.