

METALS AREA*Machine Tool Metalworking***74. Basic Machine Tool Metalworking (3)**

Basic methods of machining metals, including drilling, turning and boring, milling, grinding, and shaping; measuring tools, precision measuring instruments, and layout; steel and its heat treatment. (Student must spend two three-unit periods in class for credit.)

174. Advanced Machine Tool Metalworking (3)

Prerequisite: Ind A 74. Advanced machining and tooling, special machine tools, and precision measuring instruments; laboratory experiences in use of ferrous and nonferrous metals, cast iron and semisteel castings. (Student must spend two three-unit periods in class for credit).

175. Machine Tool Technical Problems (3)

Prerequisite: Ind A 74. Technical problems in design, layout, fabrication, machineability of materials, tooling, gearing principles, speed and feeds, coolants related to modern manufacturing processes; installation, preventive maintenance, adjustment, repair of machine tools; specifications of materials and equipment. (Lecture-lab.) (Student must spend two three-unit periods in class for credit.)

*Metal Craft***178. Jewelry and Metalsmithing (3; max total 6) (Former Ind A 177, 179)**

Design, fabrication techniques, and properties of materials as related to jewelry, gemology, and metalsmithing. Historical, contemporary, and creative emphasis. Designing and construction articles of jewelry and hollow ware by hand and machine processes. (Student must spend two three-unit periods in class for credit.)

PROFESSIONAL COURSES**189S. Recent Automotive Innovations (3)**

A special offering designed to serve students, teachers and others in the most recent automotive innovations; such as convenience-comfort components, safety equipment, smog control devices, and energy conservation techniques.

189S. Metric Teaching Aids Workshop (2)

June 17-28. This two week metrication workshop is designed to serve teachers, students and industrial personnel. The workshop is structured to present new teaching techniques and instructional media for classroom presentations, as well as practical experiences in applying the metric system to everyday living experiences. No specific background is required. After initial orientation to determine specific knowledge about the participant's background and workshop interest, the participant will be assisted in selecting and developing aids and materials through individual and group efforts. The pace will vary with the participant's previous experience.

189S. Experimental Plastics Workshop (2)

June 17-28. A workshop designed to study plastics and their various processing and fabrication techniques as related to each instructional area in industrial arts. Participants will survey and experiment with various plastics and processes ideal for the industrial arts laboratory. Opportunities will be provided for the development of low cost projects and teaching aids. Instructional emphasis will include injection molding and die development, fiberglassing, sheet lamination, blow and vacuum forming, rotational molding, pattern and flexible mold development. Individual and group instruction, films, speakers, demonstrations, and field trips.