Print Date: 3/19/18

Course Objectives/Course Outline
Spokane Community College

Course Title: **Maintenance Machining**
Prefix and Course Number: **IMMA 202**

Course Learning Outcomes:
By the end of this course, a student should:

- Interpret documentation (engineering drawings, bills of materials) and apply the information to a machining project
- Demonstrate the ability to plan, layout, and machine a project using manual machine tools
- Evaluate completed workpieces for quality using inspection techniques and measuring tools
- Describe keys, keyseats, and keyways and their functions
- Describe and demonstrate methods of creating keyways
- Apply methods and tools used to restore or remove damaged threads and other hardware
- Interpret bolt grade and torque specifications
- Apply various techniques for locking threaded joints in place
- Create basic G-code and M-code programs to operate a CNC machine
- Perform maintenance on CNC machines
- Describe and demonstrate safe CNC machine operation and crash avoidance
- Describe and maintain the motion control components of a CNC machine
- Demonstrate proper safety techniques when handling shop materials and operating equipment
- Demonstrate professionalism, critical thinking, and teamwork during in-class discussions, presentations, and hands-on activities

Course Outline:

A. *NOTE:* This course schedule is subject to change at the discretion of the instructor.

Week 1: Introduction Overview Machining Review Shop Safety Lab: Tour and Safety Lab: Job Planning – Gear Puller	**Week 7: Midterm Exam** Midterm Exam covers skills learned in Weeks 1 thru 6
Week 2: Keys and Keyways Overview of Keys and Keyways *Machinery's Handbook*: key seat sizes and key types Lab: Keyseater Demo Lab: Gear Puller	**Week 8: Machining Lab** [no lecture] Lab: Gear Puller
Week 3: Restoring and Removing Threads and Bolts Restoring Threads Removing Fasteners and Taps Lab: Thread Restoration Demo Lab: Gear Puller	**Week 9: Machining Lab** [no lecture] Lab: Gear Puller

Week 4: Fasteners Fastener and Bolt Types Tensioning and Torque Specifications Thread Locking Methods Lab: Nuts and Bolts Demonstration Lab: Gear Puller	**Week 10: Machining Lab** [no lecture] Lab: Gear Puller
Week 5: Principles of CNC Machining CNC Machine Components and Operation Coordinate and Positioning Systems G and M Codes Lab: CNC Machining Demo Lab: Gear Puller	**Week 11: Machining Lab** [no lecture] Lab: Gear Puller
Week 6: CNC Motion Control Control Systems, Feedback Systems Drive Systems and Servomotors CNC Maintenance Safety and Crash Avoidance Lab: CNC Safety and Maintenance Lab: Gear Puller	**Week 12: Final Exam** Lab: Gear Puller Final Inspection *Note: There is no written final exam for this class. *