

SYLLABUS**MACHINE TOOL: 201, 202, 203, 204****Class** M-T-W-Th. 7:30-12:30**Michael Avila, Professor****Hours:****Office**

M-W 12:30-2:00

mavila@lbcc.edu

Hours:

T-Th. 12:30-1:30

(562) 938-3073

Objectives: To prepare students for a smooth transition into the manufacturing industry work-force and, or to upgrade skills for career advancement.

Methods: By providing quality training that produces results in proficiency in all aspects of machining, machining processes, tooling, maintenance of tools and equipment, and to achieve a level of Engineer (or Ingenious) in Set-ups and operations.

Required All students must provide:

Materials:

- A. Two (2) "High Speed" tool bits (3/8" square)
- B. Hex key set (Allen wrench set)
- C. A 6" flexible scale (100 ths. graduations)
- D. Safety Glasses *must meet ANSI Z87.1 standards
- E. Text Books:
 1. Technologies of Machine Tools (fifth edition) - Krar-Oswald
 2. Blue Print Reading -
 3. Trigonometry Tables - Illinois Tool Works
- F. Casio fx-115W calculator, three ring binder, notebook paper, pencils, and eraser.
- G. Optional: Machinist Apron, broad tip black felt permanent marker.

We will provide all other tools, materials, and equipment.

Strategies:

- Lectures. - There will be five hours per week covering specific units out of the textbooks.
- Readings. - From assigned text and handout materials will support lab activities.
- Tech-Center. - Is an intricate arm of our training. All students in the two-year program must participate in the services provided by the Tech-Center. A minimum of two hours per week is required with the goal of improving academic and employability skill levels. The Tech-Center will provide the necessary tools for achieving SCANS competencies._

Grading

Procedures: Grading is based on the following elements.

Students must fulfill each requirement below:

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|----|--|----------|
| A. | There will be a minimum of 9 written tests worth 100 points each.
(The lowest test score will be dropped) | 800-pts. |
| B. | Mid term (March 12). A practical test will include a timed set-up operation. | 200-pts. |
| C. | Attendance will be averaged. 100 points for 64 days of attendance ^ψ
(Four tardies will count as one absence) | 100-pts. |
| D. | Class participation | 100-pts. |
| E. | Tech-Center | 100-pts. |
| F. | Projects: Scores are based on quality and accuracy of the manufactured parts, not quantity. (3 projects, 100 pts ea., divided by 3 = 100 pts. max.) | 100-pts. |
| G. | Inspection Reports: All projects will be inspected. The scores are based on the accuracy of the inspection, regardless of the quality of the project. All "Inspection Reports" must be turned in by May 14, 2003 | 100-pts. |
| H. | Final Exam: A compilation of all previous written tests.
See: ^ξ FINAL EXAM SCHEDULE. | 200-pts. |

Letter Grade	1547 - 1700	=	A
Assignments:	1360 - 1546	=	B
	1190 - 1359	=	C
	1037 - 1189	=	D
	Below 1036 pts.	=	F

Expectations: *All students must*

- Develop a portfolio which includes photographs of projects, tests, manufacturing procedures and inspection reports
- Abide by the "GENERAL NOTES" (see pages 3 and 4)
- Arrive as scheduled
- Utilize time in the most efficient manner
- Adhere to ALL SAFETY RULES
- Demonstrate interest and productivity
- Familiarize with college catalog and services

Classes will not meet on the following dates:

Flex Days: Tuesday March 4 and Wednesday March 26, 2003

Holidays: January 20 (King's Day) and February 17 (Washington's Day), 2003

Spring Recess: April 21-27, 2003

Field Trips: Tuesday and Wednesday March 18/19 – L.A. Convention Center

WESTEC Machine Show

MACHT 201 is designed to get you started in the basics of machining. In the learning process, you will acquire the basic skills of the most prevalent machines available in the industry, starting with the engine lathe, vertical milling machine, pedestal grinder, drill press and surface grinder.

By the end of the course, you will have completed three projects, which are designed to slowly build your confidence on the machines while acquiring new skills.

MACHT 202, a follow up course, continues to build on your previous experiences by providing more difficult projects where expectations in accuracy are also higher. Manufacturing procedures will be of your own design. Blue print reading and interpretation is strongly reinforced.

MACHT 203 - In your third semester of study, you will be acquainted with support equipment of the industry, as well as outside processes. New set-ups and operations for the lathes and milling machines will be learned. Set-ups for medium size production will be utilized. Application of algebra and trigonometry will become imperative for the manufacturing of the projects.

Attend workshops on workforce preparation and résumé writing.

MACHT 204 builds on the foundations necessary for computer numerical control (C.N.C.). Emphasis is placed on techniques for mass production. The coordinate system, "G" codes and "M" codes will be thoroughly understood. Projects are completed with minimum assistance.

4th semester students must have an updated résumé on file.

Ψ TOTAL INSTRUCTION: *Spring 2003, 64 DAYS (320hrs)*

§ FINAL EXAM SCHEDULE: *Monday May 19, 2003*

GENERAL NOTES FOR MACHINE SHOP-----ALL CLASSES

1. Broken, damaged, or dull tools must not be returned to the Tool Crib. These items are safety hazards.
2. Each piece of equipment will be cleaned thoroughly, sliding surfaces re-oiled and the surrounding area swept clean at the close of each class session or upon completion of its use. Sweep up and pick up **ALL** of your chips and dirt.
3. Return all tools to the TOOL CRIB, **not** your locker.
4. There is no need to interchange the tool holders on the lathes. If any one of them does not work properly, turn it in to your instructor so that it may be repaired or adjusted. Make **NO** repair or adjustment yourself unless specifically instructed to do so.
5. Your highest degree of cooperation is needed in order to keep the steel stock rack in order.
6. Be sure to store **ALL** equipment and steel stock, no matter how heavy or light, in a safe and secure manner. It may be **your** foot that it will fall on if not stored properly. Observe good safety practices at all times.
7. In **ANY** instance, if there is anything you do not understand thoroughly, **do not hesitate to ask your instructor**.
8. Each machine has a **lube oil can painted red** in a holder in a convenient position on the machine. This is for lube oil only. When the can is empty, fill it up!
9. Do not change the FEED rate on the power hacksaw. Use this piece of equipment with great care as the blades are quite expensive.
10. Report the malfunction of any piece of equipment to your instructor.
Do not attempt any repair yourself unless specifically instructed to do so.
11. Do not abuse any piece of equipment. Use it, but do not abuse it. **If you are unsure how to use a certain piece of equipment, ask your instructor.** Maintenance service is expensive and very difficult to obtain.
12. Use cutting oil **very sparingly**.
It has **NO** cooling effect unless applied in a flood or stream. Do not let your work area look like a big bird has taken a bath in cutting oil! Excess use of cutting oil creates a very serious safety hazard.
13. **NEVER, UNDER ANY CIRCUMSTANCES**, are you to leave a cutter in an adapter or a cutter on an arbor. This creates a very serious safety hazard. Fly cutter heads are to be removed from spindles and adapters.
14. **Cut only** steel stock that is color-coded **Brown and White or Blue** unless given specific instructions from your instructor.
15. **Be positive** that you are using the **correct blade, the correct speed, and the correct feed** when using the band saw.
This machine is to be cleaned thoroughly after each use.
16. Milling machine vises will **not** be used as drill vises.
17. Dividing heads, rotary tables, end mill adapters, arbors, etc., must be returned to their respective storage areas after their use or at the close of each class session. **We do not have servants in this shop!**
18. **AT NO TIME NOR FOR ANY REASON**, will any material other than CARBIDE be ground on the CARBIDE grinding wheels. Do not grind on the rim of these wheels; **use the face** only.
19. Non-ferrous material will not be ground on any grinding wheel. Materials in this category include: aluminum, copper, brass, plastic, rubber, and wood.

20. No equipment, tools, or material of any kind will be left on the shop carts or wagons. Clean them off after each use or do not use them. Return the carts and wagons to their respective storage areas after each use so that they may be readily found when needed.
21. **NO TOOLS OR EQUIPMENT belonging to the college will be placed in your locker.**
22. Bring safety hazards to the attention of your instructor or correct the hazard yourself. **You** may be the victim of this safety hazard.
23. Keep the lathe quick-change head as far to the left of the compound slide “T” slot as is practical. This helps prevent machine damage, breakage, and several other unpleasant problems.
24. Tools being returned to the tool crib will be placed in the proper storage space. If you do not know where this is, or cannot see where a tool belongs, **ask your instructor**.
25. Blueprints and Process Sheets must be returned to the “Blueprint File” at the close of each class.
26. Scrap metal and chips only are to be placed in the containers by the machines. Do not put paper or rags in these containers.
27. It is imperative that no rags, steel stock, or other material be wasted. Waste of anything brings on shortages or a “furnish-it-yourself” situation.
28. Personal projects will be stored in **lockers only**. No other storage space is available in the Machine Shop.
29. If you choose to use a lock on any locker in the Machine Shop, you will ensure that a key of the combination is on file in the Shop office. **This is your responsibility!** Locks without keys or combinations on file are subject to removal.
30. Use of drugs, alcohol, or other hazardous substances while in the Shop or before coming to the Shop will be cause for **immediate dismissal**.
31. Finger rings and wristwatches **may not** be worn in the Shop.
32. Open toe shoes, including tennis shoes and thongs, **may not** be worn in the Shop.
33. **Safety glasses will be worn** at all times in the Shop.
34. Long hair will be tied back or otherwise secured to the satisfaction of the instructor in charge.
35. **PLEASE DO NOT STEAL OUR TOOLS!** We do not have the money to replace them! When a tool is stolen, please remember that you are depriving many other students of the use of this tool. Class fees may have to be raised in order to help pay for “misplaced” items! Also, remember that it is entirely possible that you may be required to furnish more and more of your own tools!