MASSACHUSETTS MARITIME ACADEMY

BUZZARDS BAY, MASSACHUSETTS

MARINE ENGINEERING DEPARTMENT

Machine Tool Technology

EN -2112
FALL - 12
Course Policy and Syllabus

CADET _____

SECTION_____

DATE _____

	Monday	Tuesday	Wednesday	Thursday	Friday
	3 Labor Day	**4**	**5**	**6** LAB 1	**7**
	10 CLASS 1	**11** LAB 1 LAST DAY ADD	**12** LAB 1	**13** LAB 2A	**14**
	17 CLASS 2	**18** LAB 2A	**19** LAB 2A	**20** LAB 2B	**21**
SEPT	**24** CLASS 3	**25** LAB 2B LAST DAY DROP	**26** LAB 2B	**27** LAB 3A	**28**
	1 CLASS 4	**2** LAB 3A	**3** LAB 3A	**4** LAB 3B	**5**
	8 HOLIDAY	**9** LAB 3B	**10** LAB 3B	**11** LAB 4A	**12**
0CT	**15** CLASS 5	**16** LAB 4A DEFICIENCIES	**17** LAB 4A	**18** LAB 4B	**19**
	22 CLASS 6 UNIFORM CHG.	**23** LAB 4B	**24** LAB 4B	**25** LAB 5A	**26**
	29 CLASS 7	**30** LAB 5A	**31** LAB 5A	**1** LAB 5B	**2**
	5 CLASS 8	**6** LAB 5B	**7** LAB 5B	**8** LAB 6A	**9**
NOV	**12** HOLIDAY	**13** Monday Sched CLASS 9 LST WITHDRAW	**14** LAB 6A	**15** LAB 6B	**16**
	19 CLASS 10	**20** LAB 6A	**21** HOLIDAY	**22** HOLIDAY	**23** HOLIDAY
	26 CLASS 11	**27** LAB 6B	**28** LAB 6B	**29** LAB 7A	**30**
	3 CLASS 12	**4** LAB 7A	**5** LAB 7B	**6** LAB 7B	**7**
DEC	**10** CLASS 13	**11** LAB 7B	**12** LAB 7B	**13**	**14** END CLASSES

Massachusetts Maritime Academy
Machine Tool Technology, EN-2112
SYLLABUS AND COURSE POLICY

Instructor: Lt. Mahoney
Licensed USCG Chief Engineer, Steam.
3rd Asst. Engineer, Motor
Office Hours: 11:00-12:00, Tuesday
12:00-13:00, Tuesday
11:00-12:00, Thursday

Texts:
Machine Tool Practices **(MTP)**. Authors: Kibbe, Neely, Meyer, White. Publisher, Prentice Hall; (9 TH EDITION)
How To Run A Lathe **(HTRAL)**. Publisher, South Bend Lathe
Welding Technology Fundamentals **(WTF)** Publisher, Goodheart-Willcox Inc.
Handouts

Course Composition:
Course consists of a 1 hour lecture and a 3 hour lab weekly. Labs alternate weekly between Machine Shop and Welding Lab. Course credit is 2

Learning Objectives:

- **Set-up and dress the wheels on the bench grinder.**
- **Off-hand grind a 60 degree thread form and radius thread form on a high speed steel tool blank.**
- **Set-up and operate the lathe and tooling for facing, centerdrilling, turning and threading a test coupon to blueprint specifications.**
- **Correctly align tool and test coupon and chase an existing thread.**
- **Operate the band saws, drill press, hydraulic press and hand tools.**
- **Use precision measuring instruments**
- **Set up and use an oxy- fuel cutting torch**
- **Set-up and adjust SMAW equipment and weld a lap joint in the flat position**
- **Set-up and adjust SMAW equipment and weld a lap joint in the vertical position**
- **Be able to identify welding defects using dye penertrant testing.**
- **Demonstrate proficiency in the following STCW elements.**
  OICEW-1-1A Cut a circular hole using oxyacetylene process
  OICEW-1-1B Form two steel plates using brazing process
  OICEW-1-1C Form two steel plates using electric arc welding process
  OICEW-1-1F Visual test of welded joint
  OICEW-1-1G Dye-penetrant test of welded joint
  OICEW-8-1A Lathe project.

Course Policy:
Attendance is **mandatory**. The students must come prepared with appropriate safety equipment, books and materials. **Students will not be admitted to class or labs after the start of the period.** Each missed class will result in a reduction of the final grade by **4** points. Weekly quizzes will be given; quiz material will be from lectures and labs and reading assignments**. Reading assignments must be read before the due date listed on the syllabus.** All missed quizzes must be rescheduled within 24 hours. No cell phones are allowed in class. No programmable calculators are allowed in class.

Labs:
Students must sign the muster sheet for each lab. The student must attend on their scheduled day and session. Labs run in 2 week cycles. Students must make arrangements with the instructor to make up a

missed lab within **24** hours of the missed lab. The lab needs to be made up during the two week cycle, **while that lab is still being conducted**. Failure to do so will result in an **incomplete.** Lab grades are determined by participation, work habits, conduct, instructor assessment, pop quiz grades, and the successful completion of projects. Each student must complete the lab projects successfully. All students will come prepared for the lab with a 3 ring binder containing the semester labs handouts.

Grading:
There will be weekly quizzes. The questions will be drawn from lectures, lab sessions, and the Marine Engineering Workbook and texts.
The final grade will be determined as follows:

Machine Shop Lab	x .10
Welding Lab	x .10
Weekly Quizzes	x .60
Final Exam	x .20

A minimum grade of C- is required to pass this course.

Massachusetts Maritime Academy is committed to providing reasonable accommodations for students with documented disabilities. The Director of Disability Compliance works in collaboration with faculty and other campus departments to provide support for students with disabilities. This coordination of efforts complies with the mandates of Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990.

Week	Book & Topic ver 9	PAGES	Due Date
2. Safety (lathe)	Safety (Lab 1 handout)		
	(MTP) Hazards in lathe operations)	387-390	
Safety (welding)	(WTF) Weld safety, checklist	13-19	
Tooling	(MTP) Toolholders, cutting tools	399-412	
OFW & Gas Cutting	(WTF) Equipment & Supplies	Chap 20	.
Lathe Basics	(MTP) Engine lathe	391-398	
Spindle	(MTP) Spindle tooling	413-419	9/17
3. Operating Controls	(MTP) Controls	420-424	
Facing, Ctr. Drilling	(MTP) Facing, ctr. drilling	425-434	
OFW & Gas Cutting	(WTF) Equipment assy. and adj	Chap 21	.
4. Turning between Centers	(MTP) Work between centers	435-447	9/24
Alignment of Centers	(MTP) Alignment of centers	448-450	
Oxyfuel Gas Cutting	(WTF) Gas cutting	Chap 22	.
5. Other Lathe Operations	(MTP) Drilling, boring etc.	451-464	10/1
Brazing and Braze Welding	(WTF) Brazing and Braze Welding	Chap 25	.
6. 60 deg. Thread	(MTP) Calculations	465-469	10/15
Cutting Ext Thrd.	(MTP) Cutting ext. UNC thrd.	470-480	
Physics Of Welding	(WTF) The physics of welding	Chap 3	
Weld Joints	(WTF) Weld joints and positions	Chap 4	.
7. Hand Tools	(MTP) Hacksaws	54-56	10/22
	(MTP) Files	57-62	
	(MTP) Hand reamers	63-66	
	(MTP) Taps	67-76	
	(MTP) Dies	77-80	
SMAW	(WTF)Equipment & Supplies	Chap 5	
SMAW	(WTF) Equipment Assy & Adj.	Chap 6	.
8. Measurement	(MTP) Steel rules (inch)	107-113	10/29
Direct Measurement	(MTP) Vernier caliper (inch)	116-119	
	(MTP) Dial caliper (inch)	122-123	
Micrometer Inst.	(MTP) Types, readings	125-139	
Vernier Mics.	(MTP) Reading vernier mics.	143-145	
Comparison Instruments	(MTP) Comparison Instruments	146-153	
SMAW	(WTF) Electrodes	Chap 7	.
	(WTF) Flat welding position	Chap 8	.
9. Lathe Tapers	(MTP) Cutting tapers	485-495	11/5
SMAW	(WTF) Horizontal, vert. & OH positions	Chap 9	.
10. Steady & Follower Rests	(MTP) Using rests	496-501	11/13
SMAW	(WTF) Surfacing	Chap 10	.
11. Sawing Machines	(MTP) Sawing machines	302-312	11/19
	(MTP) Abrasive & Cold saws	323-325	
	(MTP) Using recip & horz machines	313-322	
Vertical Band Machine	(MTP) Prep & usage	326-340	
Welding Symbols	(WTF) Welding symbols	Chap 33	.
12. Drilling Machines	(MTP) The drill press	346-348	11/26
Drilling operations	(MTP) Operating drilling machines	362-373	
Drilling tools	(MTP) Drilling tools	349-357	
Countersinking & boring	(MTP) Countersinking	374-375	.
13. Inspection & Testing Welds	(WTF) Inspection and testing welds	Chap 34	12/3
14. Review			12/10