



Republic of the Philippines
OFFICE OF THE PRESIDENT
COMMISSION ON HIGHER EDUCATION

CHED MEMORANDUM ORDER (CMO)

No.: 45

Series of 2007

**SUBJECT: MODEL EMBEDMENT OF GAS WELDING IN
BACHELOR OF SCIENCE IN MECHANICAL
ENGINEERING**

In accordance with the pertinent provisions of Republic Act (RA) No. 7722 otherwise known as the "Higher Education Act of 1994," and by virtue of **Resolution No. 361-2007** of the Commission en banc dated **May 7, 2007**, the model embedment of Gas Welding in Bachelor of Science in Mechanical Engineering (BSME) is hereby adopted and promulgated by the Commission.

ARTICLE I - AUTHORIZATION

The model embedment of Gas Welding in Bachelor of Science in Mechanical Engineering program shall be operated only by institutions of higher learning with proper authority granted by the Commission on Higher Education (CHED) and by the respective Boards in the case of chartered state universities and colleges (SUCs), local colleges and universities (LCUs) and upon issuance of Certificate of Program Recognition (CoPR) by the Technical Education Skills Development Authority (TESDA). Said institutions shall submit application with full documentation in compliance with the requirements of this CMO and CMO # 8 s. 2007, otherwise known as "Amendments to CHED Memorandum Order (CMO) No. 38 s. 2006 Entitled Procedures in the Processing of Applications for the Grant of Authority to operate Ladderized Programs as part of the Implementation of Executive Order No. 358"

ARTICLE II – THE MODEL CURRICULUM

The model embedment of Gas Welding in Bachelor of Science in Mechanical Engineering shall be adopted as the minimum requirement for the completion of the BSME ladderized program with TVET qualifications on Welding (Gas) NC I with at least 214 hours and Welding (Gas) NC II with at least 234 hours.

MODEL EMBEDMENT OF GAS WELDING IN BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

**First Year
1st year - 1st Semester**

Higher Education Subjects						TVET MODULES			
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
College Algebra	3	0	3	54		<ul style="list-style-type: none"> Includes performing industry calculations 	<ul style="list-style-type: none"> Performs industry calculations 		
Plane and Spherical Trigonometry	3	0	3	54					
General Chemistry	3	3	4	108					
Engineering Drawing	0	3	1	54		<ul style="list-style-type: none"> Interpret drawing and sketches 	<ul style="list-style-type: none"> Interpreting drawing and sketches 		
Orientation to M.E.	1	0	1	18		<ul style="list-style-type: none"> Working with others Practicing career professionalism 	<ul style="list-style-type: none"> Working with others Practicing career professionalism 		
Safety Management (fr. 3 rd yr 2 nd sem)	1	0	1	18		<ul style="list-style-type: none"> NCI Practice basic housekeeping procedure Apply safety practices 	<ul style="list-style-type: none"> NC I Practice basic housekeeping procedure Apply safety practices 		
						<ul style="list-style-type: none"> NC II Practice occupational health and safety 	<ul style="list-style-type: none"> NC II Practice occupational health and safety 		

English 1	3	0	3	54	<ul style="list-style-type: none"> Apply safety procedures Receive and respond to workplace communication 	<ul style="list-style-type: none"> Apply safety procedures Receiving and responding to workplace communication 	
Pilipino 1	3	0	3	54			
PE 1			2	36			
NSTP 1			3	54			
TOTAL			24	504			

1st year - 2nd Semester

Higher Education Subjects							TVET MODULES		
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Advanced Algebra	2	0	2	36					
Analytic Geometry	2	0	2	36					
Solid Mensuration	2	0	2	36					
Workshop Theory 1-A * (fr. 3rd yr. 2 ND sem)	0	6	2	108		<ul style="list-style-type: none"> Perform Industry Calculation Contribute to quality system Use hand tools Prepare weld materials Set-up welding 	<ul style="list-style-type: none"> Performing Industry Calculation Contributing to quality system Using hand tools Preparing weld materials Setting-up welding 		

Physics 1									equipment	equipment						
English 2									<ul style="list-style-type: none"> Fit-up materials Repair weld 	<ul style="list-style-type: none"> Fitting -up materials Repairing weld 						
Pilipino 2																
PE 2																
NSTP 2																
TOTAL								23						522		

1st year - Summer

Higher Education Subjects				TVET MODULES					
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per summer	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Workshop Theory 1-B	0	18	2	108		NC I <ul style="list-style-type: none"> Weld mild steel plates and tubes 	NC I <ul style="list-style-type: none"> Perform fillet welding on mild steel plate Perform open and close butt welding on mild steel plate Perform groove welding on mild steel tube 		
TOTAL			2	108					

Welding (Gas) National Certificate (NC) I will be issued by TESDA upon passing the certification process.

Second Year
2nd year - 1st Semester

Higher Education Subjects						TVET MODULES			
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Differential Calculus	4	0	4	72					
Physics 2	3	3	4	108					
English 3	3	0	3	54		NC II <ul style="list-style-type: none"> Participate in workplace communication Work in a team environment Practice career professionalism 	NC II <ul style="list-style-type: none"> Participating in workplace communication Working with others Practicing career professionalism 		
Computer Fundamentals and Programming	0	6	2	108					
Workshop Theory and Practice II - A*	0	6	2	108		NC II <ul style="list-style-type: none"> Weld alloy steel plate using Gas welding Weld alloy steel tubes using gas welding 	NC II <ul style="list-style-type: none"> Performing groove welding on alloy steel plates Perform groove welding on alloy steel tube 		
Social Science 1	3	0	3	54					
Humanities 1	3	0	3	54					

PE 3		2	36		
TOTAL		23	594		

2nd year - 2nd Semester

Higher Education Subjects					TVET MODULES				
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Integral Calculus	4	0	4	72					
Basic Electrical Engineering	2	3	3	90					
Materials Engineering	3	3	4	108					
Probability and Statistics	3	0	3	54					
Humanities 2	3	0	3	54					
Social Science 2	3	0	3	54					
PE 4			2	36					
Workshop Theory and Practice II - B *	0	6	2	108		Continuation of Workshop Theory and Practice II - A			
TOTAL			24	576					

Note: Workshop Theory I – A & B is equivalent to Workshop Theory for the regular BSME program, while Workshop Theory and Practice II – A & B is the additional subject intended for welding.

Welding (Gas) National Certificate (NC) II will be issued by the TESDA upon passing the certification process.

Third Year

3rd year- 1st Semester

Higher Education Subjects						TVET MODULES			
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Differential Equations	3	0	3	54					
Statics of Rigid Bodies	3	0	3	54					
Computer Aided Drafting	0	3	1	54					
Machine Elements 1	2	3	3	90					
Thermodynamics 1	3	0	3	54					
Environmental Engineering	2	0	2	36					
Social Science 3	3	0	3	54					
Life and Works of Rizal (fr. 2nd yr. 2nd sem)	3	0	3	54					
TOTAL			21	450					

3rd year- 2nd Semester

Higher Education Subjects						TVET MODULES			
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Dynamics of Rigid Bodies	2	0	2	36					
Mechanics of Deformable Bodies	3	0	3	54					
Machine Elements 2	2	3	3	90					
Machine Shop Theory	0	6	2	108					
Basic Electronics	2	3	3	90					
Thermodynamics 2	3	0	3	54					
Fluid Mechanics	3	0	3	54					
Social Science 4	3	0	3	54					
TOTAL			22	540					

Fourth Year

4th year- 1st Semester

Higher Education Subjects						TVET MODULES			
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
ME Laboratory 1	0	6	2	108					
Machine Design 1	3	0	3	54					
Heat Transfer	2	0	2	36					

DC and AC Machinery	3	3	4	108				
Advance Engineering Mathematics for ME	3	0	3	54				
ME Elective 1	3	0	3	54				
Humanities 3	3	0	3	54				
TOTAL			20	468				

4th year - 2nd Semester

Description of Subjects	Higher Education Subjects				TVET MODULES				
	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
ME Laboratory 2	0	6	2	108					
Fluid Machinery	3	0	3	54					
Combustion Engineering	2	0	2	36					
Engineering Economy	3	0	3	54					
Refrigeration Systems	3	0	3	54					
Machine Design 2	3	0	3	54					
Methods of Research for ME	1	0	1	18					
ME Elective 2	3	0	3	54					
TOTAL			20	486					

Fifth Year

5th year- 1st Semester

Higher Education Subjects						TVET MODULES			
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Plant Visit/OJT	0	6	2	108					
Air conditioning and Ventilation Systems	2	3	3	90					
ME Laboratory 3	0	6	2	108					
Instrumentation and Control Engineering	2	3	3	90					
Industrial Processes	2	0	2	36					
Vibration Engineering	2	0	2	36					
Safety Engineering for ME	2	0	2	36					
ME Project Study 1	0	3	1	54					
ME Elective 3	3	0	3	54					
TOTAL			20	612					

5th year - 2nd Semester

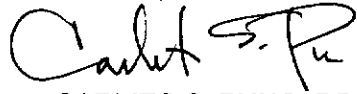
Higher Education Subjects						TVET MODULES			
Description of Subjects	Lec (Hrs)	Lab (Hrs)	Units	Hrs. per semester	Prerequisites	Units of Competency	Module Title	Nominal Duration	Remarks
Industrial Plant Engineering	3	0	3	54					
ME Laws, Ethics, Code and Standards	3	0	3	54					
Power Plant Engineering	4	3	5	126					
ME Project Study 2	0	3	1	54					
Engineering Management	3	0	3	54					
ME Elective 4	3	0	3	54					
TOTAL			18	396					

ARTICLE III - EFFECTIVITY

This CMO shall take effect immediately.

Pasig City, Philippines, August 13, 2007

For the Commission:



CARLITO S. PUNO, DPA
Chairman