



Engineering Program

Specialization	Machining Technology
Course Number	20203121
Course Title	Methods of Measurements
Credit Hours	(2)
Theoretical Hours	(2)
Practical Hours	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ This course covers the theoretical and practical fundamentals of dimension measurements. It also emphasizes the international standards of dimensional tolerances and fits and the measurements of angles, thread dimensions, and surface roughness. It also introduces the fundamentals of quality control.

Course Objectives:

This course aims at:

1. Use different dimension measurement instruments to measure and inspect products.
2. Design some of the measurement devices.
3. Find the allowable tolerances from the international standard tables.
4. Recognize the different types of measurement errors.
5. Measure the various dimensions of gears, threads, and surface roughness.
6. Acquire the fundamentals of statistical quality control.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Dimension Measurement	<ul style="list-style-type: none"> ▪ Basic terminology of measurements ▪ Design principles of measurement devices ▪ Types and grades of gauge blocks ▪ Thread Inspection 	
2.	Angle Measurement	<ul style="list-style-type: none"> ▪ Methods of angular measurements ▪ Using Sine bar ▪ Methods of slope measurement 	
3.	Tolerances and Fits	<ul style="list-style-type: none"> ▪ Tolerance and fits specifications ▪ Tolerance tables 	
4.	Surface Roughness Measurement	<ul style="list-style-type: none"> ▪ Introduction to quality of surface finish ▪ Methods of measuring surface finish 	
5.	Form and Position Measurement	<ul style="list-style-type: none"> ▪ Inspection of cylindrical forms ▪ Position measurement 	
6.	Uncertainty of Measurement	<ul style="list-style-type: none"> ▪ Characteristics of measuring instruments ▪ Measurement errors 	
7.	Introduction to Quality Control	<ul style="list-style-type: none"> ▪ Basic concepts of quality control ▪ Control charts 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Teaching Methodology:

- ❖ Lectures

Text Books & References:

Textbook:

1. J.f.w. Galyer, C.R. Shotbolt “ Metrology for Engineers” , S.I. metric edition, 1977.
2. Bass, “Introduction to Engineering Measurements”. McGraw Hill, 1971.
3. Steve F. Krar & J. William Oswald, “Technology of Machine Tools”, McGraw-Hill Publishing Company, forth Edition, 1991.
4. Jon E. Neely & Roland O. Meyer & Warren T. White, “ Machine Tool Practices “ , , John Wiley & Sons Inc, 2nd Edition 1982.
5. Paul Cambell, “ An Introduction to Measuration and Calibration”, Industrial Press, 1995.





Engineering Program

Specialization	Machining Technology
Course Number	20203122
Course Title	Methods of Measurements Lab.
Credit Hours	(1)
Theoretical Hours	(0)
Practical Hours	(3)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Dimension measurement: Angle measurement, Tolerances and fits, Surface roughness measurement, gear and screw threads measurements, Form and position measurement

Course Objectives:

This course aims at:

1. Use different dimension measurement instruments to measure and inspect products.
2. Design some of the measurement devices.
3. Find the allowable tolerances from the international standard tables.
4. Recognize the different types of measurement errors.
5. Measure the various dimensions of gears, threads, and surface roughness.
6. Acquire the fundamentals of statistical quality control.



Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Dimension Measurement		
2.	Angle Measurement		
3.	Gear and screw thread measurements		
4.	Tolerances and Fits		
5.	Surface Roughness Measurement		
6.	Form and Position Measurement	<ul style="list-style-type: none"> ▪ Inspection of cylindrical forms. ▪ Position measurement. 	
7.	Control systems		

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Laboratory

Text Books & References:**Textbook:**

1. .f.w. Galyer, C.R. Shotbolt “Metrology for Engineers”, S.I. metric edition, 1977
2. Bass, “Introduction to Engineering Measurements”. McGraw Hill, 1971.
3. Steve F. Krar & J. William Oswald, “Technology of Machine Tools”, McGraw-Hill Publishing Company, forth Edition, 1991.
4. Jon E. Neely & Roland O. Meyer & Warren T. White, "Machine Tool Practices "ohn Wiley & Sons Inc, 2nd Edition 1982.
5. Paul Cambell, “ An Introduction to Measuration and Calibration”, Industrial Press, 1995.

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20202121
Course Title	Machining Technology (1)
Credit Hours	(2)
Theoretical Hours	(2)
Practical Hours	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Principles of metal cutting operations, work piece marking, Drilling, Lathe Machines (turning), taper machining. Threading, Sawing, Shapers and surface planing machines, Milling.

Course Objectives:

This course aims at:

1. After presenting this course student should be able to: Understand the principles of metal cutting operations.
2. Recognize different types of lathe machines, drilling machines, surface planing machines and milling machines
3. Understand the principles of turning operations, threading, sawing and milling.



Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Principles of Metal cutting operations	<ul style="list-style-type: none"> ▪ Turning principles ▪ Drilling principles ▪ Surface planning principles ▪ Milling principles ▪ Boring process ▪ Broaching process ▪ Grinding process ▪ Modern machine process (Mechanical, Chemical Electro-mechanical, Thermo-electrical, process) ▪ Heat Treatment 	
2.	Work piece Marking	<ul style="list-style-type: none"> ▪ Using of paint ▪ Marking of holes positions ▪ Marking of cylindrical parts ▪ Large work pieces planning ▪ Planning machines 	
3.	Drilling	<ul style="list-style-type: none"> ▪ Drilling machines and operations ▪ Vertical Drilling Machines (Accurate, diagonal and turret) ▪ Drilling machines ▪ Drilling speed ▪ Drilling tools (sizes and shapes) ▪ Chips kind in drilling machines ▪ Reamers ▪ Threading taps ▪ Cutting forces calculations 	
4.	Turning	<ul style="list-style-type: none"> ▪ Lathes types ▪ Lathes parts ▪ Movement drives methods 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

		<ul style="list-style-type: none"> ▪ Turning cutting tools and their usage ▪ Cutting tools angles ▪ Cutting operation by using machine punches ▪ Cutting operation by using machine chucks 	
5.	Tapers turning and threading	<ul style="list-style-type: none"> ▪ Tapers turning and angles ▪ Turning by using face plate ▪ Gear cutting by using lathes 	
6.	Metal Sawing and Sawing operations	<ul style="list-style-type: none"> ▪ Metal sawing types ▪ Metal sawing parts ▪ Sawing operations 	
7.	Shapers and Surface Planing Machines	<ul style="list-style-type: none"> ▪ Shapers parts ▪ Shapers operations ▪ Surface Planing machine parts ▪ Surface Planing operation 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Lecture

Text Books & References:**Textbook:**

1. Machining Technology Manuals (1, 2, 3), Prince Al-Hussain Bin Abdallah II Military and Technical College, 1996.
2. Fundamentals of Machine Technology by C.thomos Olivo.

References:

1. Workshop Technology by W.chapman, Edward Arnold.

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20202122
Course Title	Machining Technology 1 Workshops
Credit Hours	(2)
Theoretical Hours	(0)
Practical Hours	(6)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Work piece and holes marking, Drilling processes including hole drilling, reaming, tapping and boring. Turning operations using 3-jaw, 4-jaw, chucks. Turning between two centers, and collet chuck turning. Taper and thread cutting. Turret and vertical operations. Sawing operations. Shaping and planing (horizontally and vertically). Vertical and horizontal milling.

Course Objectives:

This course aims at:

1. Recognize different types of metal cutting machines.
2. Handle with work pieces and cutting machines.
3. Understand different type of operations.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Metal cutting machines	<ul style="list-style-type: none"> ▪ knowing different types of metal cutting machines (Lathes, Milling machines, Drilling machines, Grinding machines, broaching machines, surface planing and sawing machines) 	
2.	Marking tools	<ul style="list-style-type: none"> ▪ Knowing marking tools and ways of marking 	
3.	Turning	<ul style="list-style-type: none"> ▪ Knowing turning operations, lathes parts, cutting tools ▪ Turn different parts with different ways and methods 	
4.	Drilling machines	<ul style="list-style-type: none"> ▪ Knowing of drilling machines ▪ Knowing of manual drills ▪ Knowing types of chips ▪ Knowing types of reamers ▪ Knowing ways of threading 	
5.	Tapers	<ul style="list-style-type: none"> ▪ Knowing different types of standard tapers and their use ▪ Turning of tapers by using different methods ▪ Turning of angles 	
6.	Cutting tools	<ul style="list-style-type: none"> ▪ Knowing of teeth cutting tools ▪ Thread different parts by different methods 	
7.	Sawings	<ul style="list-style-type: none"> ▪ Knowing different types of sawings ▪ Distinguish between different types of cutters ▪ Using different sawings to cut the metals 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

8.	Shapers	<ul style="list-style-type: none"> ▪ Knowing shapers and their parts ▪ Knowing shapers cutting tools and their use ▪ Knowing vertical shapers ▪ Using shapers to shape vertical, horizontal and inclined surface 	
9.	Surface planing	<ul style="list-style-type: none"> ▪ Knowing surface planing machines ▪ Knowing cutting tools and cutting speed ▪ Prepare pieces of metal for planing and knowing surface planing operations 	
10.	Milling machines	<ul style="list-style-type: none"> ▪ Knowing of different types of milling machines ▪ Knowing cutting tools for vertical and horizontal Milling machines ▪ Perform different milling methods for different pieces of metals 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Laboratory

Text Books & References:**References:**

1. Workshop Technology by W.chapman, Edward Arnold.

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20202221
Course Title	Machining Technology (2)
Credit Hours	(2)
Theoretical Hours	(2)
Practical Hours	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Indexing operation and gear milling, grinding machines and grinding wheels, surface grinding. External and Internal cylindrical grinding, CNC machines, CAM software.

Course Objectives:

This course aims at:

1. Understand indexing operation and gear milling.
2. Recognize type of grinding machines.
3. Understand both surface and cylindrical grinding operation and machines.
4. Deal with CNC machines and operate them.
5. Understand CAM software.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Indexing operation and gear milling	<ul style="list-style-type: none"> ▪ Indexing ▪ Universal dividing head ▪ Direct, Indirect and Differential indexing mechanisms ▪ Spur, bevel and helical gears ▪ Spur gears cutting ways 	
2.	Grinding	<ul style="list-style-type: none"> ▪ Grinding Machines ▪ Grinding wheels ▪ Holding ways ▪ Calculation of cutting speed, grinding time and feed rate 	
3.	Surface Grinding	<ul style="list-style-type: none"> ▪ Surface grinding machines ▪ Surface grinding operation ▪ Machine movement control ▪ Surface finishes standards ▪ Cutting fluids ▪ Disadvantage of surface grinding 	
4.	Cylindrical Grinding	<ul style="list-style-type: none"> ▪ Cylindrical grinding machine ▪ Cylindrical grinding operation ▪ External cylindrical grinding ▪ Internal cylindrical grinding ▪ Disadvantages of internal and external grinding 	
5.	CNC Machines	<ul style="list-style-type: none"> ▪ Introduction ▪ Types of N.C machines ▪ Advantages and disadvantages of CNC over manual machining methods ▪ Parts of CNC Machines ▪ Difference between CNC and NC machines 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

		<ul style="list-style-type: none"> ▪ CNC controllers ▪ Types of numerical control ▪ Paths system ▪ Absolute and relative coordinate systems 	
6.	Tools and programming	<ul style="list-style-type: none"> ▪ G and M codes ▪ Fundamentals of programming ▪ Using of G and M codes for programming ▪ Use CAM software to program CNC machines and turning center 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Lecture

Text Books & References:**Textbook:**

1. Machining Technology Manuals (1,2,3), Prince Al-Hussain Bin Abdallah II Military and
2. Technical college, 1996, CNC Operation and Programing by Ion Stenerson, Kely Curran.

References:

1. Workshop Technology by W.chapman, Edward Arnold.

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20202222
Course Title	Machining Technology 2 Workshops
Credit Hours	(2)
Theoretical Hours	(0)
Practical Hours	(6)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Helical, spur and bevel gear cutting. Cam milling. Grinding wheels classification, structure and dressing. Surface grinding operation. Internal and external grinding operation. Using CNC machines, using CAM software.

Course Objectives:

This course aims at:

1. Use diving head.
2. Distinguish between different grinding wheels types.
3. Use surface and cylindrical grinding machines.
4. Use CNC machines.
5. Learn G and M codes.
6. Use CAM software.



Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Indexing	<ul style="list-style-type: none"> ▪ Knowing diving head, parts and operations ▪ Perform direct, indirect and differential indexing mechanism ▪ Perform spur gear ▪ Perform bevel gear ▪ Perform helical gear 	
2.	Grinding	<ul style="list-style-type: none"> ▪ Distinguish between different types of grinding wheels ▪ Install grinding wheels on grinding machines ▪ Choosing grinding wheels speeds ▪ Perform an exercise on grinding operation 	
3.	Surface Grinding	<ul style="list-style-type: none"> ▪ Knowing surface grinding machines types and parts ▪ Knowing the attached parts of surface grinding machine ▪ Choosing different speeds and feed rates ▪ Apply an exercise on surface grinding machine 	
4.	Cylindrical Grinding Machines	<ul style="list-style-type: none"> ▪ Knowing cylindrical grinding machine, types, parts and operation ▪ Knowing the attached parts of cylindrical grinding machines ▪ Choosing different speeds and feed rates and apply them ▪ Apply an exercise on internal and external grinding operation 	
5.	CNC machines	<ul style="list-style-type: none"> ▪ Explain machine parts ▪ Justification of machine ▪ Program loading ▪ Tool offset and tool length compensation ▪ Calling and canceling tool offset ▪ Automatic tool radius compensation ▪ Milling exercise ▪ Turning exercise ▪ Explanation of master CAM 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Laboratory

Text Books & References:

Textbook:

1. Automotive Electricity and Electronic; BARRY HOLLENBEAK Delmer publisher.
2. Shop manual for automotive electricity and electronic.

References:

1. Workshop Technology by W.chapman, Edward Arnold.
2. CNC Operation and Programing by Ion Stenerson, Kely Curran.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20202231
Course Title	Design and Manufacturing of Molds
Credit Hours	(3)
Theoretical Hours	(3)
Practical Hours	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Introduction to mold design, metal forming process. Classification of iron alloys used for molds. Working characteristic at a given mass and shape of parts. detailed design. Molding process and materials, allowances and tolerance. Design of shearing and bending dies. Design of cores, complex shape.

Course Objectives:

This course aims at:

1. Understand the basic concepts of mold design.
2. Understand the molding process and materials.
3. Study and learn core design and manufacturing process.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Introduction to mold design	<ul style="list-style-type: none"> ▪ Functional design ▪ Metallurgical design: selection and optimum use of molds ▪ Economic considerations ▪ Metal forming process ▪ Classification of iron alloys used for molds 	
2.	Working characteristics at a given mass and shape of parts	<ul style="list-style-type: none"> ▪ Minimum section thickness ▪ Cord-hole size ▪ Dimensional tolerances ▪ Surface finish ▪ Dies classification ▪ Machines, materials and tools used in dies manufacturing 	
3.	Molding processes	<ul style="list-style-type: none"> ▪ Sand molding ▪ Investment molding ▪ Ceramic molding ▪ Plaster molding. ▪ Graphite molding 	
4.	Molds for thin sheet metals (shearing and bending).	<ul style="list-style-type: none"> ▪ Design of cutting and forming parts ▪ Points of considerations (when design a mold) ▪ Design steps for cutting molds ▪ Shearing and bending force calculations ▪ Tolerances for sheet folding process ▪ Shearing by dies 	
5.	Design of cores, complex shapes, projecting details	<ul style="list-style-type: none"> ▪ Core making ▪ Core baking ▪ Core setting ▪ Core applications and design 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Lecture

Text Books & References:

Textbook:

1. Dies manufacturing Manuals, Prince Al-Hussain Bin Abdallah II Military and Technical college, 1996.
2. Principles of metal casting, Richard W. Heine, Mc Graw Hill.

References:

1. Manufacturing Processes and systems; Philip F. Ostwald; Jairp Munoz, John Wiley & sons; 9th edition, New york 1997.
2. Plastic Injection Mould construction; Ahmed A.Rahman; The Royal scientific society, Amman-Jordan, 1997.
3. علم الصناعة، خراطه و تسويه وصناعه قوالب، وزاره التربية و التعليم، 1996.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20202232
Course Title	Design and Manufacturing of Molds Workshops
Credit Hours	(2)
Theoretical Hours	(0)
Practical Hours	(6)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Brief Course Description:

- ❖ Manufacturing of Shearing and Bending molds. Determination of mold alloys and allowances. Molding processes; sand, investment and ceramic molding . Core design. Using of CAD software in molds design.

Course Objectives:

This course aims at:

1. Learn different skills for design and manufacturing different molds types.
2. Learn types of molds.
3. Learn different materials that can be used in dies manufacturing.
4. Use CAD software to design different shapes of dies.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Distinguish between different molds types		
2.	Determine molds specifications		
3.	The importance of allowance and clearance in molds design		
4.	Determination of machines, materials and tools used in molds manufacturing		
5.	Design a mold by using CAD software		
6.	Manufacturing of sheet shearing die		
7.	Manufacturing of sheet bending die		
8.	Exercise of sand molding		
9.	Exercise of investment molding		
10.	Exercise of core design		
11.	Visits to casting and mold design plants		

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Teaching Methodology:

- ❖ Laboratory

Text Books & References:

Textbook:

1. Dies manufacturing Manuals, Prince Al-Hussain Bin Abdallah II Military and Technical college, 1996.
2. Principles of metal casting, Richard W. Heine, Mc Graw Hill.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20203231
Course Title	Forging And Welding Technology
Credit Hours	(2)
Theoretical Hours	(2)
Practical Hours	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Hand forging processes . Sheet metal work . Rolling, Bending and Drawing. Metal arc welding, oxy- acetylene welding, brazened, soldering and metal cutting. MIG and TIG welding, Equipment and Operations.

Course Objectives:

This course aims at:

1. Understand the basic information about manual forging process and sheet metal operations.
2. Understand and learn folding and drawing processes.
3. Learn the principles of metal arc welding.
4. Learn the principles of oxy- acetylene welding and soldering.
5. Learn cutting processes by using electric arc and oxy-acetylene.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Manual forging	<ul style="list-style-type: none"> ▪ Introduction ▪ Manual forging tools ▪ Drawing ▪ Drilling ▪ Folding ▪ Cutting 	
2.	Rolling Operations	<ul style="list-style-type: none"> ▪ Machines and tools ▪ Folding and its tools ▪ Metal sheet operation 	
3.	Arc Welding	<ul style="list-style-type: none"> ▪ Metal ability for welding ▪ Arc welding machines and tools ▪ Welding electrodes ▪ Welding joints ▪ Welding tests ▪ Cutting tests ▪ Safety in welding operations 	
4.	Oxy-acetylene welding	<ul style="list-style-type: none"> ▪ Oxy-acetylene welding tools ▪ Flames types ▪ Welding joints ▪ Welding positions ▪ Cutting by Oxy-acetylene ▪ Brass welding and tools 	
5.	Inert Gases	<ul style="list-style-type: none"> ▪ Introduction ▪ Inert gases types ▪ Inert gases welding machines ▪ Inert gases welding electrodes ▪ Welding joints 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Lecture

Text Books & References:

Textbook:

1. Forging and welding Technology Manuals, Prince Al-Hussain Bin Abdallah II Military and Technical college,1997.

References:

1. Fundamentals of Fabrication and welding Engineering, F.J.M.Smith, Longman Scientific & Technical.

2. اللحام و تشكيل المعادن، وزاره التربيه والتعليم ، 1997.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Engineering Program

Specialization	Machining Technology
Course Number	20203232
Course Title	Forging And Welding Technology Workshops
Credit Hours	(1)
Theoretical Hours	(0)
Practical Hours	(3)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Vertical and overhead welding positions. Oxy-acetylene welding including joints preparation, wires selection. Electrical arc welding process and applications. Metal inert gas welding.

Course Objectives:

This course aims at:

1. Work on different welding machines.
2. Perform different exercises by using different welding types.
3. Learn and understand safety ways.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Metal sheet operations	<ul style="list-style-type: none"> ▪ Manual and automatic cutting operations ▪ Folding operation ▪ Rolling operation ▪ Forging ▪ Exercises include previous operation 	
2.	Electric Arc welding	<ul style="list-style-type: none"> ▪ Joints preparation ▪ Control of current values ▪ Apply electric arc welding in different positions (vertical, horizontal , ...) 	
3.	Oxy-acetylene welding	<ul style="list-style-type: none"> ▪ Pressure valves ▪ Installation of welding torches and nozzles ▪ Welding flame preparation ▪ Welding joints preparation ▪ Selection of electrodes ▪ Applying oxy-acetylene welding in different positions (vertical, horizontal,.) 	
4.	Spot welding	<ul style="list-style-type: none"> ▪ Welding joints preparation ▪ Spot welding machines ▪ Apply an exercise on spot welding operation 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Teaching Methodology:

- ❖ Laboratory

Text Books & References:

Textbook:

1. Forging and welding Technology Manuals, Prince Al-Hussain Bin Abdallah II Military and Technical college,1997.

References:

1. Fundamentals of Fabrication and welding Engineering, F.J.M.Smith, Longman Scientific & Technical.

2. اللحام وتشكيل المعادن ، وزارة التربية والتعليم ، 1997.

