1. Basic Information

Program Title	All academic programs		
Department offering the Program			
Department Responsible for the Course	Production and Mechanical Design Engineering Department		
Course Code	ENG116		
Year/ Level	Preparatory Year -2nd Semester		
Specialization	Faculty requirement		
Teaching Hours	Lectures	Tutorial	Practical
	2		2

2. Course aims:

No.	aim
1	Identify types of materials, machining processes, forming processes, casting processes, and welding processes.

3. Learning Outcomes (LOs):

A1.1	Explain the differences between ferrous and non-ferrous materials.
A1.2	Identify casting processes.
A1.3	Explain the theory of metal cutting and types of machining processes.
A1.4	Illustrate types of forming processes and measuring tools.
A5.1	Practice research methods with contemporary issues and application of production engineering technologies.
A8.1	Communicate verbally with the colleagues in the lab and others.
A10.1	Practice self-learning strategy through research groups.

4. Course Contents:

No.	Topics	Week
1	Introducing engineering material& Ferrous & Nonferrous & Furnaces for steel & cast iron.	1, 2
2	Casting processes	3, 4, 5
3	Forming processes (forging, rolling, extrusion, drawing & bending), welding	6, 7, 8
4	Cutting processes (turning, planning, milling, drilling & grinding)	9, 10, 11
5	Measuring tools, quality and safety	12, 13, 14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Flipped classroom
3	Practical
4	Research assignment

6. Teaching and Learning Methods 0f Disable Students:

No.	Teaching Method
1	Additional Tutorials
2	Online lectures and assignments

7. Student assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination (written)	A1.1, A1.2, A1.3, A1.4
2	Oral Examination	A1.1, A1.2, A1.3, A1.4, A8.1
3	Practical Examination	A5.1, A8.1, A10.1
4	Semester work (Formative-quizzes – presentation, portfolio)	A1.1, A1.2, A1.3, A1.4, A5.1, A8.1, A10.1
5	Final Term Examination (written)	A1.1, A1.2, A1.3, A1.4

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination (written)	7
2	Oral Examination	12
3	Practical Examination	13
4	Semester work (Formative-quizzes – presentation, portfolio)	Every week
5	Final Term Examination (written)	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination (written)	7
2	Oral Examination	10
3	Practical Examination	10

4	Semester work (Formative-quizzes – presentation, portfolio)	3
5	Final Term Examination (written)	70
Total		100%

8. List of References

No.	Reference List
1	Rajesh Kumar R, "Manufacturing Technology" Jyothis Publishers, 2020.
2	Hans Kurt Toenshoff, Berend Denkena," Basics of Cutting and Abrasive Processes ", Lecture Notes in Production Engineering, Springer Berlin Heidelberg, 2013.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	Lab Facilities
3	White Board
4	Data Show System
5	Visualizer
6	Presenter
7	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Introducing engineering material& Ferrous & Nonferrous & Furnaces for steel & cast iron.	1	A1.1, A5.1, A8.1, A10.1
2	Casting processes	1	A1.2, A5.1, A8.1, A10.1
3	Forming processes (forging, rolling, extrusion, drawing & bending), welding	1	A1.4, A5.1, A8.1, A10.1
4	Cutting processes (turning, planning, milling, drilling & grinding)	1	A1.3, A5.1, A8.1, A10.1
5	Measuring tools, quality and safety	1	A1.4, A5.1, A8.1, A10.1

Course Coordinator: Pof.Dr. Ibrahim Elewa

Head of Department: Prof. Mohamed Mohamed Metwally El Gamal

Date of Approval:

Course: Production Engineering	
Program LOs	**Course LOs**
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	A1.1 Explain the differences between ferrous and non-ferrous materials. A1.2 Identify casting processes. A1.3 Explain the theory of metal cutting and types of machining processes. A1.4 Illustrate types of forming processes and measuring tools.
A5. Practice research techniques and methods of investigation as an inherent part of learning.	A5.1 Practice research methods with contemporary issues and application of production engineering technologies.
A8. Communicate effectively–graphically, verbally and in writing–with a range of audiences using contemporary tools.	A8.1 Communicate verbally with the colleagues in the lab and others.
A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	A10.1 Practice self-learning strategy through research groups.