

1.	Name of Course				Applied Mechanics
2.	Course Code				JAPD1053
	JAPD = the first alphabet identify the faculty within which the subject is offered., JAPD = the remaining three alphabet identify the course that offers the subject, 1053 = the first digit identify level of study; in this case undergraduate level, 1053 = the second and third digits identify subject identity and 1053 = the fourth digit identify credit value or credit hours				
3.	Name(s) of academic staff				To be Assigned
4.	Rationale for the inclusion of the course/module in the programme				Basic engineering subject.
5.	Semester and Year offered				1/1
6.	Total Student Learning Time (SLT)		Face to Face		Total Guided and Independent Learning
	L = Lecture T = Tutorial P = Practical S =Studio Works O = Others		L	T	Independent Study (IS)= 70 Total =126
			42	14	
7.	Credit Value				3.0
	Lecture (3 hours per week x 14 weeks) Tutorial (1hour per week x 14 weeks)				
8.	Prerequisite (if any)				None
9.	Course Objectives 1. This course is to equip the students with the basic knowledge of applied mechanics including its basic properties of area, concept of structural idealization and modelling, torsion and vibration. Course Learning Outcomes (CLO) At the end of the semester students should be able to: CLO1: Understand the concept of forces CLO2: Determine the essentials geometrical properties of section CLO3: Analyse and determine the shear force, bending moment and deflection of statically determinate beams CLO4: Understand the concept of pure torsion in solid and hollow circular sections CLO5: Understanding the concept of influence lines for internal and reaction force in statically determinate beams CLO6: Understand the basic, simple equations of motions				
10.	Transferable Skills: This course is expected the development of the following transferable skills: a) Self-management – an ability to manage time and task b) Learning skills - An ability to learn both independently and co—operatively; - An ability to use library skills, to find and organize information ; - An ability to use a wide range of academic skills (research, analysis, synthesis etc.); - An ability to identify and evaluate personal learning strategies. c) Teamwork - An ability to take responsibility and carry out agreed task; - An ability to take initiative and lead other; - An ability to identify and evaluate personal learning strategy. d) Problem solving - An ability to analyse; - An ability to think laterally about a problem; - An ability to identify strategy options;				

	- An ability to solve the problems e) Information technologies - An ability to use specialist software where relevant to the discipline.												
11.	Teaching-learning and assessment strategy A variety of teaching strategies are used throughout the course, including the following: - Classroom Lessons; Lecturer and power point presentations - Tutorial Session; - Student-Lecturer Discussion - Collaborative and Co-operative learn; - Independent study. Assessment: <table> <tr> <td>Course Work</td><td>40%</td></tr> <tr> <td>Assignment</td><td>10%</td></tr> <tr> <td>Tutorials /Quizzes</td><td>10%</td></tr> <tr> <td>Test</td><td>20%</td></tr> <tr> <td>Examination</td><td>60%</td></tr> <tr> <td><u>Total</u></td><td><u>100%</u></td></tr> </table>	Course Work	40%	Assignment	10%	Tutorials /Quizzes	10%	Test	20%	Examination	60%	<u>Total</u>	<u>100%</u>
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Test	20%												
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<u>Total</u>	<u>100%</u>												
12.	Synopsis: This course introduces students to the concept of Applied mechanics, including its various properties of area, concept of structural idealization and modelling, torsion and vibration.												
13.	Mode of Delivery: Lectures Tutorials												

14.	Performance Criteria :						
	CLO-PLO	Assessment Tool	1	2	3	4	5
	Marks		0-39	40-49	50-59	60-74	75-100
	Grade		(F)	(D,D+)	(C-,C,C+)	(B-,B,B+)	(A-,A,A+)
	CLO1: Understand the concept of forces	Assignment Quiz Tutorial Test Examination	Fail to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Poor to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Satisfactory - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Good to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Excellent to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies
	CLO2: Determine the essentials geometrical properties of section	Assignment Quiz Tutorial Test Examination	Fail to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Poor to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Satisfactory to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Good to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies	Excellent to: - learn both independently and co—operatively; - An ability to use library skills - An ability to identify and evaluate personal learning strategies

	CLO3: Analyse and determine the shear force, bending moment and deflection of statically determinate beams	Assignment Quiz Tutorial Test Examination	Fail to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Poor to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Satisfactory to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Good to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Excellent to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies
	CLO4: Understand the concept of pure torsion in solid and hollow circular sections	Assignment Quiz Tutorial Test Examination	Fail to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Poor to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Satisfactory to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Good to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Excellent to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies
	CLO5: Understanding the concept of influence lines for internal and reaction force in statically determinate beams	Assignment Quiz Tutorial Test Examination	Fail to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal	Poor to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal	Satisfactory to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal	Good to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal	Excellent to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal

			learning strategies	learning strategies	learning strategies	learning strategies	learning strategies
	CLO6: Understand the basic, simple equations of motions	Assignment Quiz Tutorial Test Examination	Fail to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Poor to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Satisfactory to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Good to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies	Excellent to: • learn both independently and co—operatively; • An ability to use library skills • An ability to identify and evaluate personal learning strategies

15.	Mapping of the Programme Objectives to the Programme Learning Outcomes										
Programme Learning Outcomes (PLO) Programme Objectives (PO)	PLO1: Ability to acquire and apply knowledge of science and engineering fundamentals;	PLO2: Acquired in-depth technical competence in civil engineering discipline;	PLO3: Ability to undertake problem identification, formulation and solution;	PLO4: Ability to utilize systems approach to design and evaluate operational performance;	PLO5: Understanding of the principles of design for sustainable development;	PLO6: Understanding of professional ethics, Islamic values, social, cultural, global and environmental responsibilities of a professional engineer and commitment to them;	PLO7: Ability to communicate effectively, not only with engineers but also with the community at large;	PLO8: ability to function effectively as an individual;	PLO9: Ability to function effectively in group with the capacity to be a leader or manager;	PLO10: Recognizing the need to undertake lifelong learning, and possessing /acquiring the capacity to do so;	PLO11: ability to become Entrepreneur;
	PEO1: To produce graduates with proficient knowledge and competency in various areas in Civil/Electrical/Mechanical Engineering	✓	✓	✓							
	PEO2: To produce graduates with professional, generic attributes to meet the present and future global demands.				✓	✓	✓		✓	✓	
	PEO3: To produce graduates with Islamic humanistic values and reinvention skills to meet the requirement of a dynamic environment. These skills include Civil Intelligence, Moral Intelligence, Self-Reliance and Communication Skills						✓	✓	✓		✓

16.	Mapping of the course Learning Outcome to the Programme Outcome											
Programme Learning Outcomes (PLO) Course Learning Outcome (CLO)		PLO1: Ability to acquire and apply knowledge of science and engineering fundamentals;	PLO2: Acquired in-depth technical competence in civil engineering discipline;	PLO3: Ability to undertake problem identification, formulation and solution;	PLO4: Ability to utilise systems approach to design and evaluate operational performance;	PLO5: Understanding of the principles of design for sustainable development;	PLO6: Understanding of professional ethics, Islamic values, social, cultural, global and environmental responsibilities of a professional engineer and commitment to them;	PLO7: Ability to communicate effectively, not only with engineers but also with the community at large;	PLO8: ability to function effectively as an individual;	PLO9: Ability to function effectively in group with the capacity to be a leader or manager;	PLO10: Recognising the need to undertake lifelong learning, and possessing /acquiring the capacity to do so;	PLO11: ability to become Entrepreneur;
CLO1: Understand the concept of forces	✓	✓	✓									
CLO2: Determine the essentials geometrical properties of section	✓	✓	✓									
CLO3: Analyse and determine the shear force, bending moment and deflection of statically determinate beams	✓	✓	✓									
CLO4: Understand the concept of pure torsion in solid and hollow circular sections	✓	✓	✓									
CLO5: Understanding the concept of influence lines for internal and reaction force in statically determinate beams	✓	✓	✓									
CLO6: Understand the basic, simple equations of motions	✓	✓	✓									

17.	Content outline of the course/module and the SLT per topic						
		Details	SLT (Hour)				
			L	T	P	IS	Total
	Topic 1	Introduction - Application of structural analysis and design; structural idealization and modeling - Concept of force- concurrent and non-concurrent coplanar	3	1	-	5	8
	Topic 2	Structural properties of Areas - Centroid- First moment of area; basic and mixed cross section - Moments of inertia- parallel axis theorem; local and principal moments of inertia and principal plane and axes - Polar moment of inertia	3	1	-	5	8
	Topic 3	Statically Determinate Beams - Moment of forces, equilibrium conditions, types of supports, types of statically determinate beams, plane of bending, plane of symmetry and neutral axis - Free body diagram, shear force diagram and bending moment diagram - Relationship between load, shear and bending moment	12	4	-	20	36
	Topic 4	Torsion - Theory of pure torsion - uniform and non-uniform - Solid and hollow section	6	2	-	10	18
	Topic 5	Influence lines for statically determinate beams Calculation of influence lines for reactions, shear force and bending moment for statically determinate beams under moving loads	9	3	-	15	27
	Topic 6	Vibration Free and forced motion of damped and undamped linear spring mass systems	9	3	-	15	27
	Total (Hour)			42	14	-	70
18.	Main references supporting the course 1. Engineering Mechanics: Combined Statics & Dynamics (12th Edition) by R. C. Hibbeler (May 3, 2009)						
	Additional references supporting the course 1. Applied Mechanics for Engineering Technology (8th Edition) by Keith M. Walker (Aug 31, 2007)						
19.	Other additional information All materials will be available to the students in the library.						