

1.	Name of Course					Engineering survey I							
2.	Course Code					JESU1013							
	JESU = the first alphabet identify the faculty within which the subject is offered., JESU= the remaining three alphabet identify the course that offers the subject, 1013 = the first digit identify level of study; in this case undergraduate level, 1013 = the second and third digits identify subject identity and 1013= 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 Civil engineering subject, students must understand and able to carry out survey works							
5.	Semester and Year offered					2/1							
6.	Total Student Learning Time (SLT)				Face to Face				Total Guided and Independent Learning				
	L = Lecture T = Tutorial				L	T	P/S	O	Independent Study(IS)=84				
	P = Practical S=Studio Works				42	-	-	-	Total=126				
	O= Others												
7.	Credit Value					3.0							
	Lecture (3 hours per week x 14 weeks)												
8.	Prerequisite (if any)					None							
9.	Course Objectives												
	1. the objective of this course is to introduce to the students the basic principles of engineering drawing and familiarise with CAD system												
	Course Learning Outcomes (CLO)												
	At the end of the semester students should be able to:												
	CLO1: Know the theory and practice of various surveying works applicable to civil engineering												
	CLO2: Know the various surveying instruments and equipment, to set up and operate them												
	CLO3: Interpret readings taken with various surveying equipment												
	CLO4: Know the Principles of Engineering Surveying												
	CLO5: Know the application of Hydrographic surveying												
	CLO6: Know the application and practice of Photogrammetry												
	*** In ENGINEERING SURVEY, students are introduced to the typical field tasks as required in civil engineering. Common methods of field procedures, bookings and reduction of observations are adopted. Students are expected to be able to establish horizontal and vertical controls, setting out and detailing. The importance of surveying field activities prior to the design and during the construction stages in civil engineering work is highlighted. Since accuracy of survey work is vital in ensuring designs are exactly positioned, students must be able to conduct survey works that meet standard accuracies												
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>Coursework</td><td>40%</td></tr> <tr> <td>Assignment</td><td>10%</td></tr> <tr> <td>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>	Coursework	40%	Assignment	10%	Quizzes	10%	Test	20%	Examination	60%	<u>Total</u>	<u>100%</u>
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Examination	60%												
<u>Total</u>	<u>100%</u>												
12.	Synopsis: This course deals with the work of Surveying in Civil Engineering practice. Students will be introduced to various equipments used in surveying works. Topics studied include prismatic compass surveying, levelling, theodolite and setting out. This course will develop the spirit of teamwork.												
13.	Mode of Delivery: Lectures												

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: Know the theory and practice of various surveying works applicable to civil engineering	Assignment Quizzes Test Examination	Fail to: • Know Broad aspect of surveying works and its application to civil engineering. • Know the Introduction to geodetics and plane surveying	Poor to: • Know Broad aspect of surveying works and its application to civil engineering. • Know the Introduction to geodetics and plane surveying	Satisfactory to: • Know Broad aspect of surveying works and its application to civil engineering. • Know the Introduction to geodetics and plane surveying	Good to: • Know Broad aspect of surveying works and its application to civil engineering. • Know the Introduction to geodetics and plane surveying	Excellent to: • Know Broad aspect of surveying works and its application to civil engineering. • Know the Introduction to geodetics and plane surveying
	CLO2: Know the various surveying instruments and equipment, to set up and operate them	Assignment Quizzes Test Examination	Fail to: • Know the various surveying instruments and equipment • Know to set up and operate the surveying instruments and equipment	Poor to: • Know the various surveying instruments and equipment • Know to set up and operate the surveying instruments and equipment	Satisfactory to: • Know the various surveying instruments and equipment • Know to set up and operate the surveying instruments and equipment	Good to: • Know the various surveying instruments and equipment • Know to set up and operate the surveying instruments and equipment	Excellent to: • Know the various surveying instruments and equipment • Know to set up and operate the surveying instruments and equipment

	CLO3: Interpret readings taken with various surveying equipment	Assignment Quizzes Test Examination	Fail to: • Know to interpret the readings taken with various surveying equipment	Poor to: • Know to interpret the readings taken with various surveying equipment	Satisfactory to: • Know to interpret the readings taken with various surveying equipment	Good to: • Know to interpret the readings taken with various surveying equipment	Excellent to: • Know to interpret the readings taken with various surveying equipment
	CLO4: Know the Principles of Engineering Surveying	Assignment Quizzes Test Examination	Fail to: • Know engineering survey control networks by traversing and GPS method. • Know measurement of base line, theory of errors and the adjustment of survey observations • Know to set out coordinates x,y,z, transfer azimuth and pre-computation • Know earth work calculation and develop mass haul diagram	Poor to: • Know engineering survey control networks by traversing and GPS method. • Know measurement of base line, theory of errors and the adjustment of survey observations • Know to set out coordinates x,y,z, transfer azimuth and pre-computation • Know earth work calculation and develop mass haul diagram	Satisfactory to: • Know engineering survey control networks by traversing and GPS method. • Know measurement of base line, theory of errors and the adjustment of survey observations • Know to set out coordinates x,y,z, transfer azimuth and pre-computation • Know earth work calculation and develop mass haul diagram	Good to: • Know engineering survey control networks by traversing and GPS method. • Know measurement of base line, theory of errors and the adjustment of survey observations • Know to set out coordinates x,y,z, transfer azimuth and pre-computation • Know earth work calculation and develop mass haul diagram	Excellent to: • Know engineering survey control networks by traversing and GPS method. • Know measurement of base line, theory of errors and the adjustment of survey observations • Know to set out coordinates x,y,z, transfer azimuth and pre-computation • Know earth work calculation and develop mass haul diagram

	CLO5: Know the application of Hydrographic surveying	Assignment Quizzes Test Examination	Fail to: • Know hydrographic surveying and familiarize with the instruments • understand positioning by DGPS • familiarize with Sounding using echo sounder	Poor to: • Know hydrographic surveying and familiarize with the instruments • understand positioning by DGPS • familiarize with Sounding using echo sounder	Satisfactory to: • Know hydrographic surveying and familiarize with the instruments • understand positioning by DGPS • familiarize with Sounding using echo sounder	Good to: • Know hydrographic surveying and familiarize with the instruments • understand positioning by DGPS • familiarize with Sounding using echo sounder	Excellent to: • Know hydrographic surveying and familiarize with the instruments • understand positioning by DGPS • familiarize with Sounding using echo sounder
	CLO 6: Know the application and practice of Photogrammetry	Assignment Quizzes Test Examination	Fail to: • Know photogrammetry • Know to interpret and analyze photogrammetry • Familiarize with flight planning and digital mapping	Poor to: • Know photogrammetry • Know to interpret and analyze photogrammetry • Familiarize with flight planning and digital mapping	Satisfactory to: • Know photogrammetry • Know to interpret and analyze photogrammetry • Familiarize with flight planning and digital mapping	Good to: • Know photogrammetry • Know to interpret and analyze photogrammetry • Familiarize with flight planning and digital mapping	Excellent to: • Know photogrammetry • Know to interpret and analyze photogrammetry • Familiarize with flight planning and digital mapping

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: Know the theory and practice of various surveying works applicable to civil engineering	✓	✓			✓					
	CLO2: Know the various surveying instruments and equipment, to set up and operate them	✓	✓			✓					
	CLO3: Interpret readings taken with various surveying equipment	✓	✓	✓		✓					
	CLO4: Know the Principles of Engineering Surveying	✓	✓	✓		✓					

	CLO5: Know the application of Hydrographic surveying	✓	✓	✓			✓					
	CLO 6: Know the application and practice of Photogrammetry	✓	✓				✓					

17.	Content outline of the course/module and the SLT per topic						
		Details	SLT (Hour)				
			L	T	P	IS	Total
	Topic 1	Introduction - Introduction to broad aspect of surveying works and its application to civil engineering. - Introduction to geodetics and plane surveying - Introduction to various equipments in surveying	2	-	-	4	6
	Topic 2	Prismatic Compass Surveying Bearing, traverse surveying, error and plotting.	4	-	-	8	12
	Topic 3	Levelling Principles of levelling, form of booking reduction, error distribution, foresight, intermediate and backsightlevelling, longitudinal and tranverselevelling, contouring, calculation of cut and fill and mass haul in earthworks, use of sight rails and boring rods and plotting of contours, profiles and sections.	10	-	-	20	30
	Topic 4	Theodolite Principles, technique of using theodolite, traverse, method of booking, determination and distribution of error	6	-	-	12	18
	Topic 5	Setting Out - Circular, transition and vertical curves, compound and overturn curves - Principle of planimeter. Control survey for setting out building work	4	-	-	8	12
	Topic 6	Principles of Engineering Surveying - Engineering survey control networks by traversing and GPS method. Including measurement of base line, theory of errors and the adjustment of survey observations. - Setting out coordinates x,y,z, transfer azimuth, pre-computation, earth work calculation and mass haul diagram	6	-	-	12	18
	Topic 7	Hydrographic surveying - Introduction to hydrographic surveying and instruments. - Positioning by DGPS - Sounding using echo sounder	4	-	-	8	12
	Topic 8	Photogrammetry - Introduction to photogrammetry - Photogrammetry interpretation and analysis - Flight planning - Digital mapping	6	-	-	12	18

	Total (Hour)	42	-	-	84	126
18.	Main references supporting the course 1. Surveying: Principles and Applications (8th Edition) by Barry F. Kavanagh (Jul 31, 2008) 2. Construction Surveying and Layout: A Step-By-Step Field Engineering Methods Manual (3rd Edition) by Wesley G. Crawford (Dec 23, 2002) 3. Engineering Surveying, Sixth Edition by W. Schofield and Mark Breach (Apr 27, 2007)					
	Additional references supporting the course 1. Practical Field Surveying and Computations, 5th.ed. Allan A.L., J.R. Hollwey and J.A.B. Meynes, William Heineman Ltd., London 1977 2. J.G. Oliver and J. Clendinning 1998," surveying ". 7th ed. Essex-Pearson. 3. Wschofied, 2001, " engineering surveying " 5th ed. Butterwort					
19.	Other additional information All materials will be available to the students in the library.					