

1.	Name of Course	Structural Design III							
2.	Course Code	JSTD3233							
	JSTD = the first alphabet identify the faculty within which the subject is offered., JSTD = the remaining three alphabet identify the course that offers the subject, 3233 = the first digit identify level of study; in this case undergraduate level, 3233 = the second and third digits identify subject identity and 3233 = 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	Core Subject in Civil engineering							
5.	Semester and Year offered	1/3							
6.	Total Student Learning Time (SLT)	Face to Face							
	L = Lecture T = Tutorial P = Practical S =Studio Works O = Others	L	T	S	O				
		28	14	14	-				
		Total Guided and Independent Learning Independent Study(IS)= 70 Total =126							
7.	Credit Value	3.0 (2+1)							
	Lecture (2 hours per week x 14 weeks) Tutorial (2 hour per week x 14 weeks) Practical (1 hour per week x 14 weeks)								
8.	Prerequisite (if any)	Structural Design II (JSTD2163)							
9.	Course Objectives 1. The objective of this course to equip the students with knowledge and advance design procedures in Reinforced Concrete design works. Students will also be introduced to prestressed concrete design and the related codes of practice. Course Learning Outcomes (CLO) At the end of the semester students should be able to: CLO1: To design with procedures in advanced topics of reinforced concrete structures. CLO2: To design prestressed concrete beam								
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>5%</td></tr> <tr> <td>Tutorial/Quizzes</td><td>5%</td></tr> <tr> <td>Studio Works</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	5%	Tutorial/Quizzes	5%	Studio Works	10%	Test	20%	Examination	60%	<u>Total</u>	<u>100%</u>
Coursework	40%														
Assignment	5%														
Tutorial/Quizzes	5%														
Studio Works	10%														
Test	20%														
Examination	60%														
<u>Total</u>	<u>100%</u>														
12.	Synopsis: This course combines knowledge and advance design procedures in Reinforced Concrete design works. Students will also be introduced to prestressed concrete design and the related codes of practice														
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: To design with procedures in advanced topics of reinforced concrete structures.	Assignment Tutorials Quizzes Studio works Test Examination	Fail to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test • Manage time and task	Poor to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test • Manage time and task	Satisfactory to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test • Manage time and task	Good to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test • Manage time and task	Excellent to: • To: Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test • Manage time and task
	CLO2: To design prestressed concrete beam	Assignment Tutorials Quizzes Studio works Test Examination	Fail to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test	Poor to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test	Satisfactory to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test	Good to: • Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test	Excellent to: • To: Learn both independent and cooperatively • Use library skills, to find and organize information • Take responsibility and carry out laboratory test

			• Manage time and task	• Manage time and task	• Manage time and task	• Manage time and task	• Manage time and task
--	--	--	--	--	--	--	--

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: To design with procedures in advanced topics of reinforced concrete structures	✓	✓	✓	✓	✓			✓	✓		
	CLO2: To design prestressed concrete beam	✓	✓	✓	✓	✓			✓	✓		

17.	Content outline of the course/module and the SLT per topic						
		Details	SLT (Hour)				
			L	T	P	IS	Total
	Topic 1	Advanced Reinforced Concrete (RC) Design - RC Frame Analysis - For buildings of medium high-rise (up to 10 floors); - Load cases & its envelopes. - Design of continuous beam, deep beam and long span beam - under torsion - Design of Slab and irregular slab using yield line theory - Ribbed Slab - Design of Column - columns with uniaxial moments - Slender columns.	12	6	6	30	54
	Topic 2	Prestressed Concrete (PSC) Design - Introduction to prestressed concrete (PSC) - Code of practice - Loads in prestressed concrete - Design of cable profile - Design of PSC beams bending shear and anchor blocks	10	5	5	25	45
	Topic 3	Design of Simple Bridge using PSC System - Introduction to bridge design - Code of practice - Design example	6	3	3	15	27
Total (Hour)			28	14	14	70	126
18	Main references supporting the course						
	- Reinforced Concrete Design by Chu-Kia Wang, Charles G. Salmon and José A. Pincheira (Jul 28, 2006) - Reinforced Concrete Design (7th Edition) by George F. Limbrunner and Abi O. Aghayere (Jan 26, 2009) - Reinforced Concrete: Mechanics and Design (5th Edition) by James K. Wight and James G. MacGregor (Jun 27, 2008) - Structural Concrete: Theory and Design by M. Nadim Hassoun and Akthem Al-Manaseer (Aug 11, 2008)						
19	Additional references supporting the course						
	- F.K. Kong & R.H. Evans, "Reinforced & Prestressed Concrete", 3rd. Edition, Van Nostrand Reinhold, U.K. - C.E. Reynolds & J.C. Steedman, "Reinforced Concrete Designer's Handbook", 11th Edition, E & F.N. Spon Ltd., London. - A.H. Allen, "Reinforced Concrete Design to BS 8110 - simply explained", E & F.N. Spon Ltd., London. - British Standards Institution, "Structural Use of Concrete, BS 8110:1995", London. - Malaysian Building By-Laws						
19	Other additional information						
	All materials will be available to the students in the library.						