

Course Number and Name											
BCE083 - SOIL DYNAMICS & MACHINE FOUNDATION											
Credits and Contact Hours											
3 & 45											
Course Coordinator's Name											
Mr.P.Dayakar											
Text Books and References											
TEXT BOOKS:											
<ul style="list-style-type: none"> Swamisanan, "Soil Dynamics and Machine Foundations", Galgotia Publications Pvt. Ltd., 2010. 											
REFERENCES BOOKS:											
<ul style="list-style-type: none"> Rtehart F.E, R.D.Woods & J.R. Hall, vibrations of Soils and Foundations, Prentice Hall, 1970. Prakash S.& Pun V.K, Soil Dynamics & Design foundation, McGraw Hill Co. 1998. Srinivasulli P &Vaidanathan C," Handbook on machine Foundations", McGraw Hill Co.1976. Code Practice of Design and Construction of Machine Foundations, I.S.2974, 1987 Part I to IV.Prakash .S and Puri V.K, "Foundation for Machines", McGraw Hill Publishing Company, Newyork, 1988 											
Course Description											
<ul style="list-style-type: none"> To understand the soil properties and suitable remedial measures to improve their behavior. To familiarize students with the dynamic properties of soil. To create an understanding about the importance of designing machine foundation for reciprocating and impact machines. 											
Prerequisites						Co-requisites					
Soil Mechanics						NIL					
required, elective, or selected elective (as per Table 5-1)											
Course Outcomes (COs)											
CO1	To understand the Vibration of elementary systems										
CO2	To improve the engineering properties and application in soil dynamics.										
CO3	The engineering dynamic properties of soil Field & Laboratory methods.										
CO4	To develop specific design Impact type machine and Rotary type machines										
CO5	To study the principles of vibration neutralizer										
Student Outcomes (SOs) from Criterion 3 covered by this Course											
COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H	M	M	H	M		H				
CO2	M	L	H	M	M		M				
CO3	M	M	L	H	M		M				
CO4	M	H	M	H	M		M				

	CO5	M	M	M	H	M		M					
List of Topics Covered													
UNIT I	INTRODUCTION												8
Vibration of elementary systems – vibratory – single degree freedom -system – free and forced vibrations with and without damping – transient response of single degree freedom systems.													
UNIT II	WAVES & WAVE PROPAGATION												9
Wave propagation in an elastic homogeneous isotropic medium - Shear and compression waves - wave propagation in elastic, half space (no theoretical treatment or derivation) properties of compression, shear and Raleigh waves – application in soil dynamics.													
UNIT III	DYNAMIC PROPERTIES OF SOILS												9
Elastic properties of soils – soil treated as spring or elastic half space – Co – efficient – provision of dynamic properties of soil as per latest BIS 5249 -Co efficient of elastic, uniform and non-uniform compression and shear- Determination of dynamic properties of soil- Field & Laboratory methods.													
UNIT IV	DESIGN OF MACHINE FOUNDATION												10
General requirements of machine foundations – Design criteria – principles of & simple procedures of design of foundations for machineries of reciprocating type, Impact& Rotary type (treated as single degree freedom only) – dynamic loads, simple design procedures for foundations under Reciprocation machines. Impact type machine and Rotary type machines.													
UNIT V	VIBRATION ISOLATION & SCREENING												9
Vibration isolation technique mechanical isolation, foundation isolation, isolation by location isolation by barriers – active and passive isolation tests – problems – types of Isolation – active, passive – principles of vibration neutralizer (no derivation)													