ASIAN SCHOOL OF TECHNOLOGY, KHORDHA
DEPT. OF MECHANICAL ENGINEERING

LESSON PLAN

SUBJECT- - STRENGTH OF MATERIAL **BRANCH-MECHANICAL**

NAME OF THE FACULTY- GOPABANDHU SWAIN **SEMESTER-3TH**

MODULE		LECTURE NO	TOPIC TO BE COVERED
1		1	TYPES OF LOAD, STRESSES & STRAINS,(AXIAL AND TANGENTIAL) HOOKE'S LAW
		2	YOUNG'S MODULUS, BULK MODULUS, MODULUS OF RIGIDITY, POISSON'S RATIO, DERIVE THE RELATION BETWEEN THREE ELASTIC CONSTANT
		3	PRINCIPLE OF SUPER POSITION, STRESSES IN COMPOSITE SECTION
		4	STRESS STRAIN CURVE FOR DUCTILE AND BRITTLE MATERIAL
		5	YIELD POINT, PLASTIC STAGE ,ULTIMATE BREAKING STRESS PERCENTAGEELONGATION, PROOF AND WORKING STRESS
		6	FACTORS OF SAFETY , POISON'S RATIO,THERMAL STRESS AND STRAIN, INTRODUCTION TO PRINCIPAL STRESSES
		7	RESILIENCE STRAIN ENERGY, RESILIENCE, PROOF RESILIENCE ANDMODULUS OF RESILIENCE
		8	STRESS DUE TO GRADUAL ,SUDDEN AND FALLING LOAD
		9	SIMPLE PROBLEMS ON ABOVE.
		10	SIMPLE PROBLEMS ON ABOVE.
2		11	DEFINITION OF HOOP AND LONGITUDINAL STRESS, STRAIN
		12	DERIVATION OF HOOP STRESS,
		13	DERIVATION OF LONGITUDINAL STRESS,
		14	DERIVATION OF LONGITUDINAL STRAIN AND VOLUMETRIC STRAIN
		15	COMPUTATION OF THE CHANGE IN LENGTH,
		16	COMPUTATION OF THE CHANGE IN DIAMETER AND VOLUME
		17	SIMPLE PROBLEMS ON ABOVE
		18	SIMPLE PROBLEMS ON ABOVE
3		19	DETERMINATION OF PRINCIPAL PLANES AND PRINCIPAL STRESS
		20	ANALYTICAL METHOD FOR THE STRESSES ON AN OBLIQUE SECTIONOF A BODY
		21	SIGN CONVENTION FOR ANALYTICAL METHOD
		22	STRESSES ON AN OBLIQUE PLANE OF A BODY SUBJECTED TO A DIRECT STRESS IN ONE PLANE
		23	STRESSES ON AN OBLIQUE PLANE OF A BODY SUBJECTED TO A DIRECT STRESS IN TWO MUTUALLY PERPENDICULAR DIRECTION
		24	STRESSES ON AN OBLIQUE PLANE OF A BODY SUBJECTED TO A DIRECT STRESS IN TWO MUTUALLY PERPENDICULAR DIRECTION ACCOMPANIEDBY A SIMPLE SHEAR STRES
		25	MAXIMUM SHEAR STRESS USING MOHR'S CIRCLE
		26	SIMPLE PROBLEMS ON ABOVE.
		27	SIMPLE PROBLEMS ON ABOVE.
		28	PREVIOUS SEMESTER QUESTION DISCUSSION
4		29	TYPES OF BEAM AND LOAD
		30	BENDING MOMENT AND SHEARING FORCE CONCEPT OF VARIOUS TYPESOF BEAMS AND LOADING

	31	CONCEPT OF END SUPPORTS, HINGED AND FIXED, CONCEPT OF BENDING MOMENT AND SHEAR FORCE
	32	B.M AND S.F DIAGRAM FOR CANTILEVER BEAM WITH POINT LOAD
	33	B.M. AND S.F DIAGRAM FOR SIMPLY SUPPORTED BEAM WITH POINT LOAD
	34	B.M AND S.F DIAGRAM OF CANTILEVER AND SIMPLY SUPPORTEDBEAMS WITH U.D.L & POINT OF CONTRAFLEXURE
	35	B.M. AND S.F DIAGRAM FOR SIMPLY SUPPORTED BEAM WITH U.D.L
	36	B.M. AND S.F DIAGRAM FOR OVER HANGING BEAM WITHPOINT LOAD
	37	B.M. AND S.F DIAGRAM FOR OVER HANGING BEAM WITH U.D.L
	38	SIMPLE PROBLEMS ON ABOVE.
	39	SIMPLE PROBLEMS ON ABOVE.
	40	PREVIOUS SEMESTER QUESTION DISCUSSION
5	41	BENDING STRESS CONCEPTS OF BENDING STRESSES
	42	THEORY OF SIMPLE BENDING , DERIVATION OF BENDING EQUATION
	43	CONCEPT OF MOMENT OF RESISTANCE
	44	BENDING STRESS DIAGRAM, SECTION MODULUS.
	45	SECTION MODULUS FOR CIRCULAR AND RECTANGULAR BEAMS
	46	SIMPLE PROBLEMS ON ABOVE.
	47	SIMPLE PROBLEMS ON ABOVE.
6	48	CONCEPT OF COLUMN,MODES OFFAILURE, TYPES OF COLUMNS, MODES OF FAILURE OF COLUMN
	49	BUCKLING LOAD, CRUSHING LOAD, SLENDERNESS RATIO
	50	EFFECTIVE LENGTH, END RESTRAINTS
	51	FACTOR EFFECTING STRENGTH OF A COLUMN, STRENGTH OF COLUMNBYEULER FORMULA WITHOUT DERIVATION
	52	SIMPLE PROBLEMS ON ABOVE.
	53	SIMPLE PROBLEMS ON ABOVE.
	54	PREVIOUS SEMESTER QUESTION DISCUSSION
7	55	ASSUMPTION OF PURE TORSION
	56	THE TORSION EQUATION FOR SOLID AND HOLLOW CIRCULAR SHAFT
	57	COMPARISON BETWEEN SOLID AND HOLLOW SHAFT SUBJECTEDTOPURE TORSION
	58	SIMPLE PROBLEMS ON ABOVE.
	59	PREVIOUS SEMESTER QUESTION DISCUSSION
	60	PREVIOUS SEMESTER QUESTION DISCUSSION

SIGNATURE OF FACULTY MEMBER **COUNTER SIGNATURE OF H.O.D**

DATE :