

Ref : GTU/Acadmics/Bridge Arc./2017/3952

Date : 01/06/2017

<u>Circular</u>

Bridge Course on Mathematics for the students of GTU of the course Diploma Architecture & Diploma Architecture Assistantship

Gujarat Technological University has made a special arrangement of Bridge Course on Mathematics for the students who have appeared for the sixth semester exam of Diploma Architecture or Diploma Architecture Assistantship in SUMMER 2016, WINTER 2016 or SUMMER 2017 examination.

As this is the special arrangement, this course will not be offered in future.

- All the Principal/Director of the institutes which offers Diploma Architecture or Diploma Architecture Assistantship will have to arrange and provide the teaching of Mathematics as a bridge course to all such students.
- The detailed syllabus for the same is attached here with.
- GTU will conduct **Multiple Choice Question** Based Examination for this subject for all the students who have registered for this course at their respective institute.
- The institute will have to make sure that examination forms are filled and gunned at institute level as per the instruction of Diploma section.
- Exam will be conducted at respective institute on 22/06/2017 from 11.00 AM to 01.30 PM
- The exam will be of 100 marks. There will not be any negative marking for the wrong answer or unattempt question.
- The passing criteria and grading will be as per the prevailing norms of GTU.
- No remedial exam will be conducted and students will not be allowed to apply for rechecking / reassessment.
- The students will be issued a certificate for the bridge course examination.
- The grades obtained in the bridge course will not be considered for calculation of final CPI/CGPA.
- The students will have to pay Rs. 100/- as examination fees.

-Sd-

Registrar

Winners of : ICT Enabled University Award E-India - 2009 * Manthan Award - 2009 * GESIA Award - 2011 * Digital Learning WES - 2011 Award * AIMS International Innovative University Award - 2013

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT BRIDGE COURSE CURRICULUM FOR DIPLOMA ARCHITECTURE OR DIPLOMA ARCHITECTURE ASSISTANTSHIP STUDENTS

Course Title: Mathematics (Code: A300001)

1. RATIONALE

The subject is classified under Basic Sciences and students are intended to know about the basic concepts and principles of Mathematics as a tool to analyze the problems in Architecture.

2. LIST OF COMPETENCIES

The course content should be taught so as to understand and perform the Architecture concepts and computations. Aim to develop the different types of Mathematical skills leading to the achievement of the following competencies:

i. Apply the concepts and principles of mathematics to solve simple Architectural problems

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)		Examination Scheme		
		Theory Marks	Total Marks	
L	Т	Е		
14	14	100	100	

Legends:

L-Lecture; T – Tutorial/Teacher Guided Theory Practice; E- University Examination

4. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics	
Unit – I Logarithm	1.1 Solve simple problems using concepts of Logarithms	Concept ,Rules and related Examples	
Unit– II Determinant s and Matrices	2.1 Solve simultaneous equations using concepts of Determinants and Matrices	Idea of Determinant and Matrix, Addition/Subtraction, Product, Inverse up to 3X3 matrix, Solution of Simultaneous Equations(up to three variables)	
Unit– III Trigonometr y	3.1 Solve simple problems using concepts of Trigonometry	Units of Angles(degree and radian), Allied & Compound Angles, Multiple –Submultiples angles, Graph of Sine and Cosine, Periodic function, sum and factor formulae, Inverse trigonometric function	
Unit– IV Vectors	4.1 Solve simple problems using concepts of Vectors	Basic concept of Vector and Scalar, addition & subtraction, Product of Vectors, Geometric meaning of Scalar and Vector Product. Angle between two vectors, Applications of Dot (scalar) and Cross (vector) Product, Work Done and Moment of Force.	
Unit-V Menstruation	5.1 Calculate the surface area and volume of different shapes and bodies.	Area of Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle Surface & Volume of Cuboids, Cone, Cylinder and Sphere.	

SUGGESTED SPRCIFICATION TABLE WITH HOURS AND MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks
1.	Logarithms	03	15
2.	Determinants and Matrices	08	25
3.	Trigonometry	08	25
4.	Vectors	06	20
5.	Mensuration	03	15
Total		28	100

6. SUGGESTED LIST OF EXERCISES (During tutorial hours)

The exercises should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency.

S. No.	Unit No.	Exercises/Tutorial		
1	1	Logarithms-Simple Examples related Definition and Rules		
2		Examples on various types and Graphs		
3	2	Determinants, Simple Examples on Matrix Addition/Subtraction and Product		
4		Co-factors, Adjoint and Inverse of Matrix		
5		Solution of Simultaneous Equation using 3X3 Matrix and its Applications		
6	3	Practice Examples: Allied & Compound Angles		
7		Practice Examples: Periodic functions, Sum/Diff and factor formulae, Inverse Trigonometric function etc.		
8		Simple Graphs of Sine and Cosine Functions(Explain Spherical Trigonometry, if possible, for Applications)		
9	4	Practice Simple Examples Vectors		
10		Example related to Dot and Cross Products and Applications		
11	5	Examples on Area		
12		Surface Area & Volume and its Applications		

Note: The above Tutor sessions are for guideline only. The remaining Tutorial hours are for revision and practice.

7. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like: course/topic based seminars, internet based assignments, teacher guided self learning activities, course/library/internet/lab based Mini-Projects etc. These could be individual or group-based.

- 1. Applications to solve identified Architectural problems and use of Internet.
- 2. Learn MathCAD to use Mathematical Tools and solve the problems of Calculus.
- 3. .Learn MATLAB and use to solve the identified problems.

5.

8. SUGGESTED LEARNING RESOURCES

A. List of Books

S.No.	Author	Title of Books	Publication
1	Anthony croft and others	Engineering Mathematics (third edition)	Pearson Education
2	W R Neelkanth	Applied Mathematics-I	Sapna Publication
3	S P Deshpande	Polytechnic Mathematics	Pune Vidyarthi Gruh
4	Rudra Pratap	Getting Started with MATLAB-7	OXFORD University Press

B. List of online videos

Sr. No.	Link	Unit	Торіс	Name of Tutor
1	https://www.youtube.com/watch?v=Kzpg66xQh4Y https://www.youtube.com/watch?v=fUbLOKBylGc https://www.youtube.com/watch?v=CaVBKMZHfZk	Ι	Concepts, rules, Application of Logarithm-Examples	Pragnesh L Thakkar
2	https://www.youtube.com/watch?v=bfbvSODhD7E https://www.youtube.com/watch?v=uJPYh3QVyJE https://www.youtube.com/watch?v=A4xbLu4HJ4I	II	Determinants and Matrices	Pragnesh T. Polara
3	https://www.youtube.com/watch?v=mpAChY85g	III	Units of angles(degree and radian)	Pragnesh L Thakkar
4	https://www.youtube.com/watch?v=X_4sv5PCxuw https://www.youtube.com/watch?v=U9a6O4fYjDE https://www.youtube.com/watch?v=Kzpg66xQh4Y	III	Allied & Compound Angles	Pragnesh L Thakkar
5	https://www.youtube.com/watch?v=PBRczmYAIFw https://www.youtube.com/watch?v=YIrgvWmBkLc	III	Multiple- Submultiples angles	Pragnesh L Thakkar
6	https://www.youtube.com/watch?v=1RXoRFGk_rI	III	Graph of sine and cosine	Pragnesh L Thakkar
7	https://www.youtube.com/watch?v=Vzz9gXh3atw https://www.youtube.com/watch?v=v7LBmQghA0c https://www.youtube.com/watch?v=ICX007kRh4s https://www.youtube.com/watch?v=309nt2LYdOw	IV	Vectors	Nikunj R Pandya
8	https://www.youtube.com/watch?v=eZgBfUO5rLQ https://www.youtube.com/watch?v=L1fg45Dg4ec https://www.youtube.com/watch?v=gwPKJQs1YA0	IV	Vectors	Pragnesh T. Polara
9	https://www.youtube.com/watch?v=lDKzSJuOKy0 https://www.youtube.com/watch?v=0qU9UFbjmIQ https://www.youtube.com/watch?v=mAO-fXW5Qwc https://www.youtube.com/watch?v=YbDs_FOcM30	V	Mensuration	Pragnesh T. Polara
10	https://www.youtube.com/watch?v=haWYL91vlxg https://www.youtube.com/watch?v=6bBcd2ecypI https://www.youtube.com/watch?v=Mtv9TKfp740	V	Mensuration	Kaushar M Chauhan

C. List of Major Equipment/ Instrument

- 1. Simple Calculator
- 2. Computer System with Printer, Internet
- 3. LCD Projector

D. List of Software/Learning Website

- 1. Excel
- 2. DPlot
- 3. MathCAD
- 4. MATLAB

You may use other Software like Mathematica and other Graph Plotting software.,

http://mathworld.wolfram.com/