



جامعة التقنية والعلوم التطبيقية بإبراء
University of Technology and Applied Sciences - Ibra

Department : Information Technology	Specialization : GFP	Academic Year: 2020 – 2021	Semester: II
Course Code: MATH1103	Contact hours	Lecture: 3 hrs.	Qualification: Intermediate
Course Name: Applied Math		Problem Solving: 1hr.	Passing Mark: 50
Pre-requisite : Basic Mathematics (FPMT0001)			

Colleges of Technology Motto	"Where Technology is Invented"
Vision	To be at the forefront of higher education institutions in technological education nationally and regionally.
Mission	To provide high quality learning, training and research environment towards developing technological, innovative and entrepreneurial capabilities to meet the ever evolving social and economic needs.
GFP Aims :	<ul style="list-style-type: none">• Help students to gain effective command of the required skills in English Language, Mathematics and Information Technology.• Provide realistic learning opportunities for students to speak, listen to, read and write social, workplace and academic English confidently and effectively.• Provide a solid foundation in English, Mathematics, and Information Technology to allow them to perform successfully in a variety of academic programs at a higher level.• Equip students with the skills and attitudes to successfully participate in lifelong learning in their academic programs and future careers.• Develop social competence by helping students to acquire teamwork and decision making skills.• Develop academic competences which will include logical and abstract reasoning, problem solving, higher level cognitive and critical thinking.
Course Goals	To ensure that students are equipped with the mathematical understanding and skills necessary to meet the cognitive and practical requirements of post-secondary or higher education studies in a variety of disciplines.

Course Objectives	Course Learning Outcomes
Upon completion of this course, the students will be able to:	A student who satisfactorily complete the course should be able to:
1. To review and recall the fundamentals necessary for continuation of the process of learning and to learn geometrical aspects of concepts studied earlier.	a. Solve two variables linear equations and inequalities and sketch their graph. c. Demonstrate an understanding of the definition of a function and its graph. d. Solve quadratic, exponential, logarithmic equations and inequalities. e. Solve simple real life problems involving linear, quadratic and exponential functions graphically and algebraically.
2. Acquire the knowledge of concepts and problem – solving skills necessary to study specialization courses.	b. Interpret a series of three simultaneous inequalities of two variables, display them graphically and determine the solution set. f. Determine the zeros and the maximum or minimum of a quadratic function, and solve related problems, including those arising from real world applications. i. Understand the inverse relationship between exponents and logarithms and use this relationship to solve related problems.
3. Learn real life business related problems and techniques of solutions.	h. Compare simple and compound interest and relate compound interest to exponential growth. j. Understand basic concepts of descriptive statistics, mean, median, mode and summarize data into tables and simple graphs(bar chart,histogram and pie chart).
4. Learn to draw, read and interpret graphs of various functions, charts, histograms and diagrams.	g. Sketch the graphs of a quadratic, exponential, and logarithmic functions.
5. Develop proficiency in obtaining solutions to business and financial problems using math concepts.	l. Undertake the computations for problems of interest, annuities and perpetuities, capitalized cost, depletion allowances, stocks and bonds. m. Use the results of mathematical calculations to help evaluate various options in reaching financial decisions, whether personal or business-related while taking into consideration financial ethics and jurisprudence.
6. Get introduced to the basic concepts of probability theory which has wide applications in almost all specializations.	k. Understand basic probability concepts and compute the probability of simple events using tree diagrams and formulas for permutations and combinations.

No.	Graduate Attributes	Learning Outcome
Attribute 1:	Effective Communication	-
Attribute 2:	Scholastic rigors practical competence	a - m
Attribute 3:	Team Work	j, l, m, e
Attribute 4:	Lifelong Learning	c, e, f, h, l, m
Attribute 5:	Autonomy and Accountability	a - m
Attribute 6:	Innovation	c, e, f, h, k, l, b, j
Attribute 7:	Entrepreneurship	h, j, l, m

College Principles / Values	Assessment & Activities (Study Skill)	Mapping with College Principles/ Values
1. Integrity - To demonstrate ethical practices in all transactions, interactions and processes.	Information Provided in Course Outline	2
	Group/Unique Assignment	1, 3
2. Professionalism - To apply agreed rules and regulations, following set	Class participation	4
	Usage of OER	1, 4

<p>policies including code of conduct and standard operating procedures and working diligently to attain set outcomes.</p> <p>3. Pursuit of Knowledge and Excellence - To establish life-long learning excellence in technological knowledge acquisition, application and innovation.</p> <p>4. Participation and Partnership - To enhance participation and partnership relations within and beyond Colleges of Technology.</p>	Class activity	4
	Online quiz	4
	Home work	2, 4
	MHC	1, 2, 3, 4
	E-Learning	3, 4
	Usage of Moodle by means of Mobile	4
	Group Discussion / Activities	1, 4
	Class presentation	3, 4
	Plagiarism (Information Provided in Course Outline)	1

Assessment Plan	Course Work	Marks Distribution	Total Marks
	Test (Chapter 1 to Chapter 3)	25	45
	Self – Study (Topics: 5.1)	5	
	Quiz*	10	
	Class Activities *(Chapter 3: 3.4, 3.5) <ul style="list-style-type: none"> ● Online activities ● Work in pairs/group activities ● Class presentation ● Unique class activities 	5	
	Final Exam	55	55

	TOTAL	100
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Class Activity - 5 Marks: (During Week 5) The topics will be from **chapter 3:** 3.4, 3.5 as mentioned in course outline. The student has to attempt the online quiz in the e-learning portal. Marks will be awarded based on the performance of the student.

Self-Study test - 5 Marks: (During Week 8) The topics will be from **chapter 5:** 5.1 as mentioned in Course Outline. The student has to study these topics and a quiz for **20 minutes** will be conducted online in the e-learning portal and it will be announced well ahead to the student.

Quiz*- 10 Marks: The student has to attempt quiz 1 and quiz 2 through E- learning Portal, average marks of these two quizzes will be considered as quiz marks. **Topics:** Quiz 1: 1.1, 1.2, 2.1, 2.2, 2.3
Quiz 2: Chapter 4 (Full)

Final Exam - 55 Marks: (During Week 12/13) Final Exam can be comprehensive and include all material (chapters) covered in the course. Ensure that larger weight is given to the outcomes covered after Test. For the Final Exam 30% (16.5 Marks) of the learning outcomes from Test (**Chapter 1 to Chapter 3**) and 70% (38.5 Marks)from the remaining topics (**Chapter 4 to Chapter 6**) to be considered.

Course Outline

Course Code: MATH1103

Course Name: APPLIED MATH

Course Outcome No.	Topics & Contents to be Covered	Contact hours			Week No.	Method/s (Plan/s) for coverage of Outcomes	Source (Text/Reference books)
		Lecture	Problem Solving	Self-learning			
	Introduction	1hr			1		
a, b	Chapter 1: System of Linear Equations and Inequities in two variables 1.1 Solve systems of linear equations with two variables 1.11 Solving a System of Linear Equations by Graphing 1.12 Solving a System of Linear Equations by substitution 1.13 Solving a System of Equations by Elimination 1.2 Solving Systems of Linear Inequalities graphically	2 hrs	2 hrs 30 min	4 hrs	1, 2	ONLINE White board teaching, Class discussion, class assignment	Raymond A. Barnett, Michael R. Ziegler and Karl E. Byleen, 7 th edition, <i>College Algebra with Trigonometry</i> , McGraw Hill
c, d, e, f, g	Chapter 2: FUNCTIONS AND GRAPHS 2.1 Function 2.2 Graphing a linear functions 2.3 Graphing a quadratic functions 2.4 Modeling Real-World Problems with linear and Quadratic Functions	2 hrs 30 min	4 hrs	5 hrs	2, 3	ONLINE White board teaching, Class discussion, class assignment	Raymond A. Barnett, Michael R. Ziegler and Karl E. Byleen, 7 th edition, <i>College Algebra with Trigonometry</i> , McGraw Hill Pre-calculus Fifth edition by James A. Stewart

d, e, g, i	Chapter3: EXPONENTIAL AND LOGARITHMIC FUNCTIONS 3.1 Exponential Functions and its Graphs 3.2 Natural Exponential Function 3.3 Properties of Exponential Functions 3.4 Applications of exponential functions 3.5 Logarithmic Function 3.6 Natural Logarithmic Function 3.7 Solving Logarithmic inequality	1 hr 30 min	1 hr	2 hrs	4	ONLINE White board teaching, Class discussion, student centered learning, class assignment	Raymond A. Barnett, Michael R. Zigler and Karl E. Byleen, 7 th edition, <i>College Algebra with Trigonometry</i> , McGraw Hill. Pre-calculus Fifth edition by James. A. steward Booth, DexterJ/Turner., <i>Business Mathematics wi</i> , Pitman Publisher
		2 hrs	3 hrs	4 hrs	4, 5		
	Test (Test revision and preparation)				6		
h,l,m	Chapter 4: Mathematics of Finance 4.1 Simple Interest and Discount 4.2 Compound Interest 4.3 Annuities and Sinking Funds 4.4 Perpetuity (Annexure) 4.5 Depletion (Annexure) 4.6 Capitalized cost (Annexure) 4.7 Stocks (Annexure) 4.8 Bonds (Annexure)	1 hr 30 min	1 hr	6 hrs	5, 7, 8	ONLINE White board teaching, Class discussion through moodle resource, class participation, class assignment	Pre-calculus Fifth edition by James. A. steward Booth, Dexter/Turner., <i>Business Mathematics wi</i> , Pitman Publisher
		2 hrs 30 min	1 hr 30 min				
		1 hr	1 hr				
j	Chapter 5: Statistics 5.1 Measures of the Center of the Data (Self Study) 5.2 Organizing data- Frequency distribution 5.3 Graphs	1 hrs 30 min	2 hrs	5 hrs	9	ONLINE White board teaching, Class discussion , class assignment	Allan G. Bluman, 5th edition, Elementary Statistics, Mc Graw Hill Publishing Company

k	Chapter 6: Probability 6.1 Sample Spaces 6.2 Probability 6.3 Properties of Probability 6.4 Conditional Probability 6.5 Independent Events 6.6 Permutations 6.7 Combinations	2 hrs	1 hr 30 min	6 hrs	9, 10	ONLINE White board teaching, Class discussion , class assignment	Allan G. Bluman, 5th edition, Elementary Statistics, Mc Graw Hill Publishing Company
		2 hrs	2 hrs	3 hrs	10, 11		
Tutorial	1 hr			11			
TOTAL		20 hrs 30 min	19 hrs 30 min				
		40 hrs					

Additional Information

Class Behavior & Attendance Guidelines	
Cheating	In case an accusation of cheating during a Test is proven, the following will be imposed: Disciplinary Action for Cheating Case/s: <ul style="list-style-type: none"> • First Offense : Zero Mark • Second Offense : Dismissal from the college
Plagiarism	Plagiarism occurs when other's work such as print material, images, audio-visual creations, computer programs, electronic materials, etc. are used without appropriate acknowledgement. Disciplinary Action for Student Plagiarism: <ul style="list-style-type: none"> ➤ First Offense : Written warning and repeat the work ➤ Second Offense : Zero mark and suspension for one semester ➤ Third Offense : Dismissal from the college

Attendance	<ul style="list-style-type: none"> ➤ Students will get the first warning letter if his/her absence reaches 10% without any valid excuses, second warning letter will be issued for 20%. If the absence reaches 30%, a Debarred Letter will be issued. ➤ A student will be considered as LATE when s/he arrives after 10 minutes of the class start time. Being LATE for THREE times in a class will be considered as ONE class absence. ➤ If a student failed to take any of the tests with a valid reason, s/he has to submit the supporting documents within one week from the date of examination which s/he failed to attend.
Health & Safety	<p>HCT is committed to provide a healthy and safe working and learning environment for staff, students and visitors. Students are requested to</p> <ul style="list-style-type: none"> ➤ manage and maintain a work environment where risks to health and safety are minimal. ➤ be aware and protected against hazards at the workplace. ➤ help the college in protecting staff, students, and visitors from any dangers in case of emergency or crisis. ➤ read the procedures from this policy, that are to be followed in case of events such as fire, smoke, natural calamities and accidents.

Note: *Course Outline is subject to change at the discretion of the instructor to accommodate instructional and/or students' needs.*

MATH HELP CENTER TIME TABLE

S. No.	Day	Time
1	Sunday	
2	Monday	
3	Tuesday	
4	Wednesday	
5	Thursday	

Applied Math Course Delivery Plan

Week No.	Date / Day(Sunday to Thursday)	1 st Class (2 hours)	2 nd Class (2 hours)
1	24-01-2021 to 28-01-2021	Introduction, Description about course assessment plan, Chapter 1: 1.1, 1.2(on)	
2	31-01-2021 to 04-02-2021	Chapter 1: 1.2, Chapter 2: 2.1, 2.2(on)	
3	07-02-2021 to 11-02-2021	Chapter 2: 2.2, 2.3, 2.4	
Quiz-1 during Week – 3 (10 Marks, Duration: 45 min) Topics: 1.1, 1.2, 2.1, 2.2, 2.3			
4	14-02-2021 to 18-02-2021	Chapter 3: 3.1, 3.2, 3.3, 3.4, 3.5(on)	
5	21-02-2021 to 25-02-2021	Chapter 3: 3.5, 3.6, 3.7, Chapter 4: 4.1(on)	
Class Activity (Online) during Week – 5 (5 Marks, Duration: 20 min) Topics: 3.4, 3.5			
6	28-02-2021 to 04-03-2021	Progress test for English and Math	
Test during Week - 6 (25 Marks, Duration:1 Hour 30 min) Topics: Chapter 1 to Chapter 3			
7	07-03-2021 to 11-03-2021	Chapter 4: 4.1, 4.2, 4.3, 4.4	
8	14-03-2021 to 18-03-2021	Chapter 4: 4.5, 4.6, 4.7, 4.8	
Self-Study (Online) during Week – 8 (5 Marks, Duration: 20 min) Topic: 5.1			
9	21-03-2021 to 25-03-2021	Chapter 5: 5.2,5.3, Chapter 6: 6.1	
10	28-03-2021 to 01-04-2021	Chapter 6: 6.2, 6.3, 6.4, 6.5	
Quiz-2 during Week – 10 (10 Marks, Duration: 45 min) Topics: Chapter 4 (Full)			
11	04-04-2021 to 08-04-2021	Chapter 6: 6.6, 6.7 & Tutorial	
Final Exam: during Week – 12/13 (Duration: 2 hours) (55 Marks), Topics: (Full book)			
1.1 to 3.7: Marks: 16.5 (30%)			
4.1 to 6.7: Marks: 38.5 (70%)			

Note: Quiz* = Average of Quiz 1 and Quiz 2