DON BOSCO ARTS & SCIENCE COLLEGE

ANGADIKADAVU

(Affiliated to Kannur University Approved by Government of Kerala)

ANGADIKADAVU P.O., IRITTY, KANNUR – 670706

COURSE PLAN

BSc MATHEMATICS

(2017 – 20)

SEMESTER -V

ACADEMIC YEAR –(2019–20)

V Semester BSc MATHEMATICS (2017 - 20)			
SL. No.	**Name of Subjects with Code**	**Name of the Teacher**	**Duty Hours per week**
1.	5B05 MAT Real Analysis	Ajeena Joseph-3 Noble Philip-2	5
2.	5B06 MAT Abstract Algebra	Athulya.P	5
3.	5B07 MAT Differential Equations, Laplace Transform and Fourier Series	Najumunnisa.K	5
4.	5B08 MAT Vector Calculus	Sebin Abraham	4
5.	5B09 MAT Graph Theory	Noble Philip	4
6.	5D03 MAT Quantitative Arithmetic and Reasoning	Remya Raj	2
7.			
8.			
	Class Incharge	**Athulya P.**	

TIME TABLE

Day	09.50 Am - 10.45 Am	10.45 Am -11.40 Am	11.55 Am -12.50 Pm	01.40 Pm - 02.35 Pm	02.35 Pm - 03.30 Pm
1	5B06 MAT Abstract Algebra	5B08 MAT Vector Calculus	5B09 MAT Graph Theory	5B07 MAT Differential Equations, Laplace Transform and Fourier Series	5B05 MAT Real Analysis
2	5B09 MAT Graph Theory	5B06 MAT Abstract Algebra	5B05 MAT Real Analysis	5B07 MAT Differential Equations, Laplace Transform and Fourier Series	5B09 MAT Graph Theory
3	5B06 MAT Abstract Algebra	5B09 MAT Graph Theory	Open Course	5B08 MAT Vector Calculus	5B07 MAT Differential Equations, Laplace Transform and Fourier Series
4	5B08 MAT Vector Calculus	5B07 MAT Differential Equations, Laplace Transform and Fourier Series	Open Course	5B05 MAT Real Analysis	5B06 MAT Abstract Algebra
5	5B07 MAT Differential Equations, Laplace Transform and Fourier Series	5B06 MAT Abstract Algebra	5B05 MAT Real Analysis	5B05 MAT Real Analysis	5B08 MAT Vector Calculus

Subject Code:	**5B05 MAT**
Subject Name:	**Real Analysis**
No. of Credits:	**4**
No. of Contact Hours:	**90**
Hours per Week:	**5**
Name of Faculty	**Noble Philip and Ajeena Joseph**

Module - I (25 Hours)
The algebraic property of real numbers, The absolute value and Real line, Thecompleteness property of R, Applications of the supremum property, Intervals.(Sections 2.1 to 2.5)

Module - II (20 Hours)
Sequence and their limits, Limit theorems, Monotone sequences, Subsequence andBolzano-Weirstrass theorem, Cauchy criterion.(Sections 3.1 to 3.5)

Module - III (25 Hours)
Introduction to series, Absolute convergence, Tests for absolute convergence, Testsfor non absolute convergence.(Sections 3.7, 9.1, 9.2, 9.3)

Module - IV (20 Hours)
Continuous functions, Combination of continuous functions, Continuous functions on intervals - Uniform continuity, monotone and inverse functions.(Sections 5.1 to 5.4, 5.6)

Text:
R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 3rd Edition, Wiley.

References:
1. T. M. Apostol, Mathematical Analysis, 2nd Edition, Addison- Wesley.
2. V. Karunakaran, Real Analysis, Pearson Education.
3. K.A. Ross , Elementary Real Analysis, The Theory of Calculus, Springer
4. J.V. Deshpande, Mathematical Analysis and Applications, Narosa Pub.House.
5. J. M. Howie, Real Analysis, Springer 2007.
6. Ghorpade and Limaye , A Course in Calculus and Real Analysis, Springer, 2006

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2019 To 07-06-2019	1	The algebraic property of real numbers.
		2	Examples
		3	Theorems
2	10-06-2019 To 14-06-2019	4	Theorems
		5	The absolute value
		6	Properties of absolute value
		7	Theorems
		8	Theorems
		9	Class Test
		10	Problems
3	17-06-2019 To 21-06-2019	11	Problems
		12	Arithmetic-Geometric mean inequality
		13	Bernoulli's inequality
		14	Problems
		15	Examples
		16	Upperbound and lowerbound
		17	Examples
4	24-06-2019 To 28-06-2019	18	Examples
		19	Supremum and infimum
		20	Examples
		21	Applications of supremum property
		22	Examples
		23	Problems
		24	Theorem: R is uncountable
5	01-07-2019 To 05-07-2019	25	Periodic decimal
		26	Class Test
		27	Question paper discussion
		28	Introduction to sequences
		29	Examples
		30	Examples
6	08-07-2019 To	31	Theorem
		32	Limit of sequences
		33	Convergence
		34	Examples

No of Weeks	Dates	Session	Topic
	12-07-2019	35	Examples
		36	Limit theorems
		37	Assignment
		38	Limit theorems
7	15-07-2019 To 19-07-2019	39	Monotone sequences
		40	Monotone sequences
		42	Class Test
		43	Subsequences
		44	Subsequences
		45	Theorems
		46	Question paper discussion
8	22-07-2019 To 26-07-2019	23 July	First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
9	29-07-2019 To 02-08-2019	47	Bozano-weierstrass theorem
		48	Bozano-weierstrass theorem
		49	Examples
		31 July	Karkadaka Vavu
		50	Introduction to series
		51	Series
		52	Examples
		53	Examples
10	05-08-2019 To 09-08-2019	54	Problems
		55	Problems
		56	Class Test
		57	Absolute convergence
		58	Absolute convergence
		59	Tests for absolute convergence
		60	Ratio test
11	12-08-2019 To 16-08-2019	61	Ratio test
		62	Assignment
		15 Aug	Independence day
		63	Problems
		64	Problems
		65	Problems

No of Weeks	Dates	Session	Topic
12	19-08-2019 To 23-08-2019	66	Tests for non absolute convergence
		67	Tests for non absolute convergence
		68	Tests for non absolute convergence
		69	Theorems
		70	Examples
		71	Exam
		23 Aug	Sreekrishna Jayanthi
13	26-08-2019 To 30-08-2019	72	Question paper discussion
		73	Examples
		28 Aug	Ayyankali Jayanthi
		74	Functions
		75	Continuous functions
		76	Examples
		77	Examples
14	02-09-2019 To 06-09-2019	78	Problems
		79	Class Test
		80	Combination of continuous functions
		81	Combination of continuous functions
		82	Problems
		83	Problems
			Onam Celebration
15	09-09-2019 To 13-09-2019		Muharram
			First Onam
			Thiruvonam
			Third Onam
			Fourth Onam - SreeNarayana Guru Jayanthi
16	16-09-2019 To 20-09-2019	84	Uniform continuity
		85	Theorems
		86	Theorems
		87	Monotone functions
		88	Inverse functions
		89	Examples
		90	Revision
17	23-09-2019 To 27-09-2019	23 Oct	Second Internal
			Second Internal
			Second Internal
			Second Internal
			Second Internal

No of Weeks	Dates	Session	Topic
18	30-09-2019 To 04-10-2019		Study Leave
			Study Leave
		2 Oct	Gandhi Jayanthi
			Study Leave
			Study Leave
			Study Leave
19	07-10-2019 To 11-10-2019	07 Oct	Mahanavami
		08 Oct	Vijayadashami
		09 Oct	University Exam Begin

Subject Code:	**5B06 MAT**
Subject Name:	**Abstract Algebra**
No. of Credits:	**4**
No. of Contact Hours:	**90**
Hours per Week:	**5**
Name of Faculty	**Athulya P.**

Module - I (20 Hours)

Binary operations. Groups - Definition and examples, Elementary properties of groups,Finite groups and group tables. Subgroups –Subsets and Subgroups, Cyclic subgroups.Cyclic groups - Elementary properties of cyclic groups, Structure of cyclic groups,Subgroups of finite cyclic groups. (Sections 2, 4, 5, 6)

Module - II (25 Hours)

Groups of permutations – Cayley's theorem.Orbits, cycles and alternating groups(Theorem 9.15 without proof).Cosets and theorem of Lagrange. (Sections 8, 9, 10)

Module - III (20 Hours)

Homomorphisms - Structure relating maps, properties of homomorphism. Factor Groups-Factor groups from homomorphism, Fundamental homomorphism theorem.(Sections 13,14)

Module - IV(25 Hours)

Rings and fields- Homomorphism and isomorphism.Integral domains - Divisors of zeroand cancellation, Characteristic of a ring.Fermat's and Euler's theorems.(Sections 18, 19, 20)

Text:

J. B. Fraleigh , A First Course in Abstract Algebra, 7th Edition, Pearson.

References:

1. M. Artin, Algebra, Prentice Hall, 1991.
2. I. N. Herstein, Topics in Algebra, Wiley, 2nd Edition
3. U.M. Swami and A.V.S.N. Murthi, Abstract Algebra, Pearson Education.
4. J. A. Gallian, Contemporary Abstract Algebra, Narosa Pub. House.
5. P. B. Bhattacharya, S.K. Jain and S.R. Nagpaul, Basic Abstract Algebra, 2nd Edition, Cambridge University Press.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2019 To 07-06-2019	1	Binary operations.
		2	Examples for binary operations
		3	Examples for binary operations
2	10-06-2019 To 14-06-2019	4	Theorem
		5	Groups - Definition and examples
		6	Examples
		7	Examples
		8	Elementary Properties of groups Theorem
		9	Theorem
		10	Theorem
C	17-06-2019 To 21-06-2019	11	Theorem & Corollary
		12	Finite groups and group tables
		13	Subgroups –Subsets and Subgroups
		14	Definitions
		15	Examples
		16	Examples
		17	Theorems
4	24-06-2019 To 28-06-2019	18	Cyclic subgroups- Theorem & definitions
		19	Examples
		20	Cyclic groups - Elementary properties of cyclic groups
		21	Theorem & Examples
		22	Exam
		23	Theorem & Corollary
		24	Definition & Examples
5	01-07-2019 To 05-07-2019	25	Structure of cyclic groups
		26	Theorem
		27	Subgroups of finite cyclic groups.-Theorem
		28	corollary
		29	Examples
		30	Exam
6	08-07-2019	31	Module II- Groups of permutations
		32	Definition & Examples
		33	Theorem

No of Weeks	Dates	Session	Topic
	To 12-07-2019	34	Assignment
		35	Definition & Examples
		36	Definition &Lemma
		37	Cayley's theorem
		38	Definition & Examples
7	15-07-2019 To 19-07-2019	39	Exam
		40	Orbits- Definitions
		42	Examples
		43	Cycles
		44	Definition & Examples
		45	Theorem
		46	Examples
8	22-07-2019 To 26-07-2019	23 July	First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
9	29-07-2019 To 02-08-2019	47	Even and Odd Permutations
		48	Definition & Corollary
		49	Examples
		31 July	KarkadakaVavu
		50	Theorem
		51	Definition & Examples
		52	The Alternating Group-Definition
		53	Theorem
10	05-08-2019 To 09-08-2019	54	Cosets and theorem of Lagrange
		55	Theorem
		56	Definition & Examples
		57	Examples
		58	Theorem
		59	Corollary
		60	Theorem
11	12-08-2019 To 16-08-2019	61	Module III-Homomorphisms - Structure relating maps
		62	Definitions
		15 Aug	Independence day
		63	Examples
		64	Examples

No of Weeks	Dates	Session	Topic
		65	Theorem
12	19-08-2019 To 23-08-2019	66	Properties of homomorphism - Definitions
		67	Theorem
		68	Examples
		69	Definition & Corollary
		70	Exam
		71	Factor Groups- Factor groups from homomorphism
		23 Aug	Sreekrishna Jayanthi
13	26-08-2019 To 30-08-2019	72	Theorem & Examples
		73	Theorem
		28 Aug	Ayyankali Jayanthi
		74	Definition, Corollary & Examples
		75	Fundamental homomorphism theorem
		76	Module IV- Rings and fields
		77	Examples
14	02-09-2019 To 06-09-2019	78	Homomorphism and isomorphism.
		79	Examples
		80	Integral domains - Divisors of zero and cancellation
		81	Definition & Examples
		82	Theorem
		83	Characteristic of a ring-Theorem
			Onam Celebration
15	09-09-2019 To 13-09-2019		Muharram
			First Onam
			Thiruvonam
			Third Onam
			Fourth Onam - SreeNarayana Guru Jayanthi
16	16-09-2019 To 20-09-2019	84	Fermat's and Euler's theorems
		85	Theorem
		86	Exam
		87	Module I-Revision
		88	Module II-Revision
		89	Module III-Revision
		90	Module IV-Rivision
17	23-09-2019 To 27-09-2019	23 Oct	Second Internal Exam
			Second Internal Exam
			Second Internal Exam
			Second Internal Exam

No of Weeks	Dates	Session	Topic
			Second Internal Exam
18	30-09-2019 To 04-10-2019		Study Leave
			Study Leave
		2 Oct	Gandhi Jayanthi
			Study Leave
			Study Leave
			Study Leave
19	07-10-2019 To 11-10-2019	07 Oct	Mahanavami
		08 Oct	Vijayadashami
		09 Oct	University Exam Begin

Subject Code:	**5B07 MAT**
Subject Name:	**Differential Equations, Laplace Transformand Fourier Series**
No. of Credits:	**4**
No. of Contact Hours:	**90**
Hours per Week:	**5**
Name of Faculty	**Najumunnisa K.**

Module I: First Order Differential Equations (20 Hours)
Basic concepts and ideas, Separable differential equations, Exact differential equations.Integrating factors, Linear differential equationsc, Orthogonaltrajectories of curves, Existence and uniqueness of solutions (Sections 1.1, 1.3, 1.5, 1.6, 1.8and 1.9 of Text 1). - Introductory examples, . (Sections 3.1, 3.2)

Module II: Second Order Linear Differential Equations (25 Hours)
Homogeneous linear equations of second order, Second order homogeneous equation withconstant coefficients, Case of complex roots, Complex exponential function, Differentialoperators, Euler-Cauchy equation, Existence and uniqueness theory (proof omitted),Wronskian, Non homogeneous equations, Solution by undetermined coefficients, Solutionby variation of parameters. (Sections 2.1 to 2.10 except 2.5)

Module III: Laplace Transform (22 Hours)
Laplace transform, Inverse transform, Linearity, Transforms of derivatives and integrals,Unit step function, second shifting theorem, Dirac's Delta function, Differentiation and integration of transforms, Convolution, Partial Fractions. Differential equations.(Sections 5.1 to 5.6)

Module IV: Fourier Series (23 Hours)
Periodic functions. Trigonometric series, Fourier series, Functions of any period p=2L, Evenand odd functions, Half range expansion, Fourier integrals (Sections 10.1 to 10.4 and 10.8).

Text :
E. Kreyzig, Advanced Engineering Mathematics, 8th Edition, John Wiley, 2006.

References:
1. S.L. Ross, Differential Equations, 3rd Edition, Wiley.
2. G. Birkhoff and G.C. Rota, Ordinary Differential Equations, Wiley and Sons, 3rd Edition
3. E.A. Coddington, An Introduction to Ordinary Differential Eqution, Printice Hall
4. W.E. Boyce and R.C.Diprima, Elementary

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2019 To 07-06-2019	1	Basic concepts and ideas
		2	**Problems**
		3	Separable differential equations
2	10-06-2019 To 14-06-2019	4	**Problems**
		5	Exact differential Equations
		6	**Problems**
		7	Integrating factors
		8	**Problems**
		9	Linear differential equations
		10	**Problems**
3	17-06-2019 To 21-06-2019	11	**Problems**
		12	Orthogonaltrajectories of curves
		13	**Problems**
		14	Existence and uniqueness of solutions
		15	**Problems**
		16	**Problems**
		17	Class Test
4	24-06-2019 To 28-06-2019	18	**Problems**
		19	Introductory examples
		20	**Problems**
		21	Homogeneous linear equations of second order
		22	**Problems**
		23	Second order homogeneous equation
		24	**Problems**
5	01-07-2019 To 05-07-2019	25	**Problems**
		26	Differentialoperators
		27	**Problems**
		28	Euler-Cauchy equation
		29	**Problems**
		30	Existence and uniqueness theory
6	08-07-2019 To	31	**Problems**
		32	Non homogeneous equations
		33	**Problems**
		34	**Problems**

No of Weeks	Dates	Session	Topic
	12-07-2019	35	Solution by undetermined coefficients
		36	**Problems**
		37	**Problems**
		38	**Problems**
7	15-07-2019 To 19-07-2019	39	Class Test
		40	Solutionby variation of parameters.
		42	**Problems**
		43	**Problems**
		44	**Problems**
		45	Question Paper Discussion
		46	Question Paper Discussion
8	22-07-2019 To 26-07-2019	**23 July**	**First Internal Exam**
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
9	29-07-2019 To 02-08-2019	47	Laplace transform
		48	**Problems**
		49	**Problems**
		31 July	**KarkadakaVavu**
		50	**Problems**
		51	Inverse transform
		52	**Problems**
		53	**Problems**
10	05-08-2019 To 09-08-2019	54	Linearity
		55	**Problems**
		56	Transforms of derivatives and Integrals
		57	**Problems**
		58	**Problems**
		59	Unit step function
		60	**Problems**
11	12-08-2019 To 16-08-2019	61	**Problems**
		62	second shifting theorem
		15 Aug	**Independence day**
		63	**Problems**
		64	**Problems**
		65	Class Test

No of Weeks	Dates	Session	Topic
12	19-08-2019 To 23-08-2019	66	Dirac's Delta function
		67	Differentiation and integration of transforms
		68	**Problems**
		69	**Problems**
		70	**Problems**
		71	Convolution
		23 Aug	**SreekrishnaJayanthi**
13	26-08-2019 To 30-08-2019	72	Partial Fractions
		73	Differential equations
		28 Aug	**AyyankaliJayanthi**
		74	Periodic functions
		75	Trigonometric series, Fourier series
		76	Functions of any period p=2L
		77	**Problems**
14	02-09-2019 To 06-09-2019	78	**Problems**
		79	**Problems**
		80	**Problems**
		81	**Problems**
		82	Even and odd functions
		83	**Problems**
			Onam Celebration
15	09-09-2019 To 13-09-2019		**Muharram**
			First Onam
			Thiruvonam
			Third Onam
			Fourth Onam - SreeNarayana Guru Jayanthi
16	16-09-2019 To 20-09-2019	84	Half range expansion
		85	**Problems**
		86	**Problems**
		87	**Problems**
		88	**Problems**
		89	Class Test
		90	Question Paper Discussion
17	23-09-2019 To 27-09-2019	**23 Oct**	**Second Internal**
			Second Internal
			Second Internal
			Second Internal
			Second Internal

No of Weeks	Dates	Session	Topic
18	30-09-2019 To 04-10-2019		Study Leave
			Study Leave
		2 Oct	Gandhi Jayanthi
			Study Leave
			Study Leave
			Study Leave
19	07-10-2019 To 11-10-2019	07 Oct	Mahanavami
		08 Oct	Vijayadashami
		09 Oct	University Exam Begin

Subject Code:	**5B08 MAT**
Subject Name:	**Vector Calculus**
No. of Credits:	**4**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of Faculty	**Sebin Abraham**

Module - I (18 Hours)

Lines and planes in space, Vector functions, Arc length and Unit Tangent Vector **T,**Curvature and Unit Normal Vector **N** , Torsion and Unit Binormal Vector **B** .(Sections 12.5,13.1, 13.3 to 13.5 of Text 1)

Module - II (24 Hours)

Directional derivatives and gradient vectors, Tangent planes and differentials, Extremevalues and saddle points, Lagrange multipliers, Partial derivatives with constrainedvariables, Taylor's formula for two variables (Sections 14.5 to 14.10 of Text 1). Divergenceof a vector field, Curl of a vector field. (Sections 8.10 and 8.11 of text 2)

Module - III (15 Hours)

Line integrals, Vector fields, work, circulation, flux, Path independence, potentialfunctions, conservative fields, Green's theorem in the plane.(Sections 16.1 to 16.4 of Text 1)

Module - IV (15 Hours)

Surface area and surface integrals, Parameterized surfaces, Stokes' theorem (theorems without proof), Divergence theorem and unified theory (theorems without proof)—(Sections 16.5 to 16.8 of Text 1)

Texts:

1. M. D. Weir, J. Hass and F. G. Giordano, Thomas' Calculus, 11th Edition, PearsonEducation.
2. E. Kreyzig, Advanced Engineering Mathematics, 8th Edition, John Wiley, 2006.

References

1. G. B. Thomas and R. L. Finney, Calculus, 9th Edition, LPE, Pearson Education
2. H. F. Davis and A. D. Snider, Introduction to Vector Analysis, 6th Edition,Universal Book Stall, New Delhi.
3. F. W. Bedford and T. D. Dwivedi, Vector Calculus, McGraw Hill Book Company

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2019 To 07-06-2019	1	Introduction to vector calculus
		2	A quick review of vectors and operations
		3	A quick review of vectors and operations
2	10-06-2019 To 14-06-2019	4	Line and its equation
		5	Parametric equation of line
		6	Distance to a line
		7	Equation of plane
		8	Planes in space
3	17-06-2019 To 21-06-2019	9	Planes in space
		10	Vector functions
		11	Vector functions
		12	Arc length and unit tangent vector T
		13	Arc length and unit tangent vector T
4	24-06-2019 To 28-06-2019	14	Class test
		15	Curvature and unit normal vector N
		16	Torsion and unit Binormal vector B
		17	Torsion and unit Binormal vector B
		18	Calculation of T,N,B etc.
5	01-07-2019 To 05-07-2019	19	Directional derivatives and gradient vectors
		20	Directional derivatives and gradient vectors
		21	Directional derivatives and gradient vectors
		22	Tangent planes and differentials
		23	Tangent planes and differentials
6	08-07-2019 To 12-07-2019	24	Tangent planes and differentials
		25	Extreme values and saddle points
		26	Extreme values and saddle points
		27	Extreme values and saddle points
		28	Lagrange multipliers
		29	Lagrange multipliers
		30	Partial derivatives with constrained variables
7	15-07-2019 To 19-07-2019	31	Partial derivatives with constrained variables
		32	Partial derivatives with constrained variables
		33	Taylor's formula for two variables
		34	Taylor's formula for two variables

No of Weeks	Dates	Session	Topic
		35	Divergence of a vector field
		36	Divergence of a vector field
8	22-07-2019 To 26-07-2019	**23 July**	**First Internal Exam**
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
9	29-07-2019 To 02-08-2019	37	Divergence of a vector field
		38	Divergence of a vector field
		39	Curl of a vector field
		31 July	**KarkadakaVavu**
		40	Curl of a vector field
		41	Quick review of chapters
		42	Class test
10	05-08-2019 To 09-08-2019	43	Line integrals
		44	Vector fields
		45	Vector fields
		46	work
		47	work
		48	Circulation
11	12-08-2019 To 16-08-2019	49	Flux
		50	Flux
		15 Aug	**Independence day**
		51	Path independence
		52	Potential functions
12	19-08-2019 To 23-08-2019	53	Conservative fields
		54	Conservative fields
		55	Green's theorem in the plane
		56	Green's theorem in the plane
		57	Class test
		23 Aug	**SreekrishnaJayanthi**
13	26-08-2019 To 30-08-2019	58	Surface area and surface integrals
		59	Surface area and surface integrals
		28 Aug	**AyyankaliJayanthi**
		60	Surface area and surface integrals
		61	Surface area and surface integrals
14	02-09-2019	62	Parameterized surfaces

No of Weeks	Dates	Session	Topic
	To 06-09-2019	63	Parameterized surfaces
		64	Parameterized surfaces
		65	Parameterized surfaces
		66	Parameterized surfaces
			Onam Celebration
15	09-09-2019 To 13-09-2019		**Muharram**
			First Onam
			Thiruvonam
			Third Onam
			Fourth Onam - SreeNarayana Guru Jayanthi
16	16-09-2019 To 20-09-2019	67	Stokes' theorem (theorem without proof)
		68	Divergence theorem and unified theory
		69	Divergence theorem and unified theory
		70	Review of stokes' theorem and divergence theorem and problems
		71	Class test
		72	Quick review of very important topics
17	23-09-2019 To 27-09-2019	**23 Oct**	**Second Internal**
			Second Internal
			Second Internal
			Second Internal
			Second Internal
18	30-09-2019 To 04-10-2019		**Study Leave**
			Study Leave
		2 Oct	**Gandhi Jayanthi**
			Study Leave
			Study Leave
			Study Leave
19	07-10-2019 To 11-10-2019	**07 Oct**	**Mahanavami**
		08 Oct	**Vijayadashami**
		09 Oct	**University Exam Begin**

Subject Code:	**5B09 MAT**
Subject Name:	**Graph Theory**
No. of Credits:	**3**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of Faculty	**Noble Philip**

Module I – Basic Results (18 Hours)
Introduction, Basic Concepts, Subgraphs, Degrees of Vertices, Paths and Connectedness,Line Graphs (Whitney's theorem without proof), Operations on Graphs.(Sections 1.1 to 1.8 except 1.6)

Module II –Connectivity, Trees (24 Hours)
Introduction, Vertex Cuts and Edges Cuts, Connectivity and Edge Connectivity (Whitney'stheorem without proof), Blocks, Introduction, Definition, Characterization, and SimpleProperties, Centers and Centroids, Counting the Number of Spanning Trees, Cayley'sFormula. (Sections 3.1 to 3.4 and 4.1 to 4.5)

Module III – Independent Sets, Eulerian and Hamiltonian Graphs (18 Hours)
Introduction, Vertex-Independent Sets and Vertex Coverings, Edge-Independent Sets, Introduction, Eulerian Graphs, Hamiltonian Graphs, Hamilton's "Around the World" Game. (Sections 5.1 to 5.3, and 6.1 to 6.3 and 6.3.1)

Module IV – Directed Graphs (12 Hours)
Introduction, Basic Concepts, Tournaments (Sections 2.1 to 2.3)

Text: R. Balakrishnan and K. Ranganathan, A Text Book of Graph Theory, 2nd Edition, Springer

References:
1. J.A. Bondy and U.S.R.Murty, Graph Theory with applications. Macmillan
2. F. Harary, Graph Theory, Narosa publishers
3. J. Clark and D. A. Holton, A First look at Graph Theory, Prentice Hall
4. K.R. Parthasarathy, Basic Graph Theory, Tata-McGraw Hill
5. J.A. Dossey, Discrete Mathematics, Pearson Education.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2019 To 07-06-2019	1	Introduction
		2	Applications of graph theory in mathematics
		3	Applications of graph theory in mathematics
2	10-06-2019 To 14-06-2019	4	Uses of graph theory in real life
		5	Basic concepts
		6	Basic concepts
		7	Basic concepts
		8	Basic concepts
3	17-06-2019 To 21-06-2019	9	Basic concepts
		10	Basic concepts
		11	Subgraphs
		12	Subgraphs
		13	Subgraphs
4	24-06-2019 To 28-06-2019	14	Subgraphs
		15	Spanning subgraphs
		16	Spanning subgraphs
		17	Degrees of Vertices
		18	Degrees of Vertices
5	01-07-2019 To 05-07-2019	19	Class test
		20	Paths
		21	Paths
		22	Assignment
		23	Examples
6	08-07-2019 To 12-07-2019	24	Connectedness
		25	Connectedness
		26	Connectedness
		27	Assignment
		28	Class test
		29	Line Graphs
		30	Line Graphs
7	15-07-2019 To 19-07-2019	31	Examples
		32	(Whitney's theorem without proof)
		33	Theorems
		34	Theorems
		35	Theorems

No of Weeks	Dates	Session	Topic
		36	Operations on Graphs
8	22-07-2019 To 26-07-2019	**23 July**	**First Internal Exam**
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
9	29-07-2019 To 02-08-2019	37	Introduction
		38	Vertex Cuts
		39	Examples
		31 July	**KarkadakaVavu**
		40	Edges Cuts
		41	Edges Cuts
		42	Assignment
10	05-08-2019 To 09-08-2019	43	Connectivity and Edge Connectivity
		44	Whitney'stheorem without proof
		45	Class test
		46	Blocks
		47	Introduction
		48	Definition, Characterization
11	12-08-2019 To 16-08-2019	49	Simple Properties,
		50	Centers and Centroids
		15 Aug	**Independence day**
		51	Counting the Number of Spanning Trees
		52	Counting the Number of Spanning Trees
12	19-08-2019 To 23-08-2019	53	Assignment
		54	**Class test**
		55	Cayley's Formula.
		56	Cayley's Formula
		57	Introduction
		23 Aug	**SreekrishnaJayanthi**
13	26-08-2019 To 30-08-2019	58	Eulerian Graphs
		59	Hamiltonian Graphs
		28 Aug	**AyyankaliJayanthi**
		60	Hamilton's "Around the World" Game.
		61	Hamilton's "Around the World" Game.

No of Weeks	Dates	Session	Topic
14	02-09-2019 To 06-09-2019	62	Introduction
		63	examples
		64	Assignment
		65	Basic Concepts
		66	Basic Concepts
			Onam Celebration
15	09-09-2019 To 13-09-2019		**Muharram**
			First Onam
			Thiruvonam
			Third Onam
			Fourth Onam - SreeNarayana Guru Jayanthi
16	16-09-2019 To 20-09-2019	67	Tournaments
		68	Class test
		69	Tournaments
		70	Assignment
		71	Tournaments
		72	conclusion
17	23-09-2019 To 27-09-2019	**23 Oct**	**Second Internal**
			Second Internal
			Second Internal
			Second Internal
			Second Internal
18	30-09-2019 To 04-10-2019		**Study Leave**
			Study Leave
		2 Oct	**Gandhi Jayanthi**
			Study Leave
			Study Leave
			Study Leave
19	07-10-2019 To 11-10-2019	**07 Oct**	**Mahanavami**
		08 Oct	**Vijayadashami**
		09 Oct	**University Exam Begin**

Subject Code:	**5D03 MAT**
Subject Name:	**Quantitative Arithmetic and Reasoning**
No. of Credits:	**2**
No. of Contact Hours:	**36**
Hours per Week:	**2**
Name of Faculty	**Remya Raj**

Module – I (18 Hours)
Average, Problems on ages, Profit and loss, Ratio and proportion, Chain rule, Time andwork. (Chapters 6, 8, 11, 12, 14, 15)

Module–II (18 Hours)
Time and distance, Problems on Trains, Boats and streams, Calendar, Clocks, Permutationsand combinations, Heights and distances. (Chapters 17, 18, 19, 27, 28, 30, 34)

Text:R.S. Aggarwal, Quantitative Aptitude for Competitive Examinations, S. Chand Company Ltd, 7th Edition.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2019 To 07-06-2019	1	Average.problems
		2	problems
2	10-06-2019 To 14-06-2019	3	Problems on ages,problems
		4	problems
		5	Profit and loss,problems
		6	problems
3	17-06-2019 To 21-06-2019	7	problems
		8	problems
		9	Chain rule, problems
		10	problems
4	24-06-2019 To 28-06-2019	11	problems
		12	Class test
		13	Time and work,problems
		14	problems
5	01-07-2019 To 05-07-2019	15	problems
		16	Ratio and proportion, problems
		17	problems
6	08-07-2019 To 12-07-2019	18	problems
		19	problems
		20	problems
7	15-07-2019 To 19-07-2019	21	revision
		22	Question paper discussion
		23	Class test
8	22-07-2019 To 26-07-2019	**23 July**	**First Internal Exam**
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
			First Internal Exam
9	29-07-2019 To 02-08-2019	24	Time and distance, problems
		31 July	**KarkadakaVavu**
		25	problems

No of Weeks	Dates	Session	Topic
10	05-08-2019 To 09-08-2019	26	Problems on Trains, problems
		27	problems
11	12-08-2019 To 16-08-2019	28	Boats and streams, problems
		15 Aug	Independence day
		29	problems
12	19-08-2019 To 23-08-2019	30	Calendar, problems
		31	problems
		23 Aug	SreekrishnaJayanthi
13	26-08-2019 To 30-08-2019		Class test
		28 Aug	AyyankaliJayanthi
		32	Clocks, problems
14	02-09-2019 To 06-09-2019	33	problems
		34	Permutationsand combinations, problems
			Onam Celebration
15	09-09-2019 To 13-09-2019		Muharram
			First Onam
			Thiruvonam
			Third Onam
			Fourth Onam - SreeNarayana Guru Jayanthi
16	16-09-2019 To 20-09-2019	35	Heights and distances ,problems
		36	Class test
17	23-09-2019 To 27-09-2019	23 Oct	Second Internal
			Second Internal
			Second Internal
			Second Internal
			Second Internal
18	30-09-2019 To 04-10-2019		Study Leave
			Study Leave
		2 Oct	Gandhi Jayanthi
			Study Leave
			Study Leave
			Study Leave
19	07-10-2019	07 Oct	Mahanavami
		08 Oct	Vijayadashami

No of Weeks	Dates	Session	Topic
	To 11-10-2019	09 Oct	University Exam Begin