



KARNATAK UNIVERSITY, DHARWAD
ACADEMIC (S&T) SECTION
ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಧಾರವಾಡ

ವಿದ್ಯಾಮಂಡಳ (ಎಸ್&ಟಿ) ವಿಭಾಗ

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ಸಂ. KU/Aca(S&T)/OS-Gen/2026-27/ 1208

ದಿನಾಂಕ: 1 AUG 2026

ಅಧಿಸೂಚನೆ

ವಿಷಯ: 2026-27ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಸ್ನಾತಕ ಪದವಿ-1, 2ನೇ ಹಾಗೂ 5, 6ನೇ ಸೆಮಿಸ್ಟರ್‌ಗಳಿಗೆ ಪಠ್ಯಕ್ರಮ ಅಳವಡಿಸುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: ೧. ಎಲ್ಲ ನಿಖರತೆಗಳ ಸಭೆ ಜರುಗಿದ ದಿನಾಂಕ: 23 / 24 / 25.07.2026.

೨. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ದಿನಾಂಕ: 20-07-2026.

ಮೇಲ್ಕಂಡಿರುವ ವಿಷಯ ಹಾಗೂ ಉಲ್ಲೇಖಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ಮೇರೆಗೆ, ಸನ್ 2026-27ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಸ್ನಾತಕ ಪದವಿಗಳಾದ BA / B.Com / B.Sc / BCA / BBA ಮತ್ತು ಇನ್ನಿತರ ವೃತ್ತಿಯೇತರ / ವೃತ್ತಿಪರ ಕೋರ್ಸುಗಳಿಗೆ 1 ಮತ್ತು 2ನೇ ಸೆಮಿಸ್ಟರ್ ಹಾಗೂ 2026-27ನೇ ಸಾಲಿಗೆ 5 ಮತ್ತು 6ನೇ ಸೆಮಿಸ್ಟರ್‌ಗಳಿಗೆ ಪಠ್ಯಕ್ರಮವನ್ನು ಅಳವಡಿಸುವ ಕುರಿತು ಮುಂಬರುವ ವಿದ್ಯಾವಿಷಯ ಪರಿಷತ್ ಸಭೆಯ ಸ್ಥಿರೀಕರಣಕ್ಕೊಳಪಟ್ಟು (Pending approval of Academic Council) ಅಧಿಸೂಚನೆ ಪ್ರಕಟಿಸಿದೆ. ಅದರಂತೆ, ಪಠ್ಯಕ್ರಮವನ್ನು ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲ www.kud.ac.in ದಲ್ಲಿ ಬಿತ್ತರಿಸಲಾಗಿದೆ. ಸದರ ಪಠ್ಯಕ್ರಮವನ್ನು ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲದಿಂದ ಡೌನ್‌ಲೋಡ್ ಮಾಡಿಕೊಳ್ಳಲು ಸೂಚಿಸುತ್ತ ವಿದ್ಯಾರ್ಥಿಗಳು ಹಾಗೂ ಸಂಬಂಧಿಸಿದ ಎಲ್ಲ ಬೋಧಕರ ಗಮನಕ್ಕೆ ತಂದು ಅದರಂತೆ ಕಾರ್ಯ ಪ್ರವೃತ್ತಿರಾಗಲು ಸೂಚಿಸಲಾಗಿದೆ.

ಅಡಕ: ಮೇಲಿನಂತೆ

N. Ramiah
ಕುಲಸಚಿವರು 31/7/26

ಗೆ,
ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಎಲ್ಲ ಅಧೀನ ಹಾಗೂ ಸಂಬಂಧ ಪರಿಹಾರವಿದ್ಯಾಲಯಗಳ ಪ್ರಾಚಾರ್ಯರುಗಳಿಗೆ (ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲ ಹಾಗೂ ಮಿಂಚಂಚೆ ಮೂಲಕ ಬಿತ್ತರಿಸಲಾಗುವುದು)

ಪ್ರತಿ:

1. ನೋಡಲ್ ಅಧಿಕಾರಿಗಳು, UUCMS ಘಟಕ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
2. ನಿರ್ದೇಶಕರು, ಐ.ಟಿ. ಶಾಖೆ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
3. ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
4. ಕುಲಸಚಿವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
5. ಕುಲಸಚಿವರು (ಮೇಲ್ವಿಚಾರಣೆ) ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
6. ಅಧೀಕ್ಷಕರು, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ / ಗೌಪ್ಯ / ಜಿ.ಎ.ಡಿ. / ವಿದ್ಯಾಂಡಳ (ಪಿ.ಜಿ.ಪಿ.ಎಚ್.ಡಿ) ವಿಭಾಗ, ಸಂಬಂಧಿಸಿದ ಕೋರ್ಸುಗಳ ವಿಭಾಗಗಳು ಪರೀಕ್ಷಾ ವಿಭಾಗ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.



KARNATAK UNIVERSITY, DHARWAD

Programme: B.Sc.

Course: MATHEMATICS

SYLLABUS FOR I & II SEMESTER

(DSC and SEC)

UNDER

Revised National Education Policy (R-NEP) 2024

Revised Credit System (RC-NEP) 2026

Effect from 2026-27 onwards

KARNATAK UNIVERSITY, DHARWAD

Programme: B.Sc.

Course: MATHEMATICS

Effect from 2026-27 onwards

Semester	Type of Course	Theory /Practical	Course Code	Course Title	Instruction Hours/week	Total Hours of syllabus/Sem	Duration of Sem-End Exam	Marks			Credits
								Formative Assessment	Summative Assessment	Total	
I	DSC-1 (T1)	Theory	CC1MAT1T1	Algebra-I and Calculus-I	04	60	03	20	80	100	03
	DSC-1 (P1)	Practical	CC1MAT1P1	Practical on Algebra-I and Calculus-I	04	56	03	10	40	50	02
II	DSC-2 (T2)	Theory	CC2MAT1T1	Real Analysis-I and Calculus-II	04	60	03	20	80	100	03
	DSC-2 (P2)	Practical	CC2MAT1P1	Practical on Real Analysis-I and Calculus-II	04	56	03	10	40	50	02
*II/ III/IV	SEC	Practical	CC0MAT6P1	Programming with GNU Octave	04	56	03	10	40	50	02

*Student shall study this Skill Enhancement Course (SEC) either in 2nd/3rd/4th but not in all the semester.

KARNATAK UNIVERSITY, DHARWAD

Programme: B.Sc. Course: MATHEMATICS

Programme Specific Outcomes (PSOs):

On completion of the 03-year Degree in Mathematics, students will be able to:

PSO1	Demonstrate a sound understanding of the fundamental concepts, principles, and techniques in algebra, calculus, differential equations, real and complex analysis, linear algebra, geometry and topology
PSO2	Apply mathematical methods and computational techniques to solve theoretical and practical problems arising in Science, Engineering, Economics, and Related fields
PSO3	Develop logical reasoning, analytic thinking, and problem solving skills through proof techniques, quantitative analysis, mathematical modeling to solve interdisciplinary problems
PSO4	Use appropriate mathematical software and computational tools to analyze data, perform numerical computations, and visualize mathematical tools
PSO5	Communicate mathematical ideas, arguments, and solutions effectively in both written and oral forms while working independently and collaboratively in academia and industry
PSO6	Pursue higher studies, research, or professional careers by applying mathematical knowledge with ethical responsibility and lifelong learning skills

B.Sc. Semester–I
Subject: MATHEMATICS
Discipline Specific Core Course (DSC)
Course Title: Algebra-I and Calculus–I
Course Code: CC1MAT1T1(Theory)

Type of Course	Theory /Practical	Credits	Instruction hours per week	Total No. of Lectures / Hours per Semester	Duration of Sem End Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
DSC–1 (T1)	Theory	03	04	60 Hrs.	03 Hrs.	20	80	100

Course Outcomes (COs): After completion of course (Theory), students will be able to:

CO1: Learn to solve the system of homogeneous and non-homogeneous linear equations in n variables by using concept of rank of matrix, find eigenvalues and eigenvectors.

CO2: Understand the concepts of continuity.

CO3: Solve examples involving indeterminate forms.

CO4: Evaluate the radius of curvature in Cartesian and parametric forms.

CO5: Learn geometrical representation of mean value theorem and Rolle's theorem.

CO6: Identify and apply the Leibnitz theorem, intermediate value theorem and obtain Maclaurin's series expansions.

Unit	Title: Algebra-I and Calculus–I	60Hours /Sem
Unit-I	Matrices:	15Hrs.
	Rank of a matrix based on row reduction to echelon form, Reduction to normal form, Solution of system of linear equations: Criterion for existence of non-trivial solutions of homogeneous system of linear equations, Solution of system of non-linear equations: Criterion for existence of non-trivial solutions of system of non-homogeneous linear equations, Characteristic equation of matrices, Eigenvalues and Eigenvectors of square matrices, Cayley-Hamilton theorem, Inverse of matrices by Cayley-Hamilton theorem.	
Unit-II	Limits and Continuity:	15Hrs.
	Definition of limit and continuity of a function in ε - δ form. Algebra of limits (with proof) and continuity, Definition of boundedness of continuous function, Properties of continuous function, Intermediate value theorem and its examples, Definition and problems on differentiability of a function, Indeterminate forms, Evaluation of limits using L-Hopital's Rule.	

Unit-III	Polar Coordinates:	15Hrs.
	Polar coordinates, Angle between the radius vector and tangent, Angle of intersection of curves (polar forms), Length of perpendicular from pole to the tangent, Pedal equations, Derivative of an arc length in Cartesian, parametric and polar forms, Concavity, Convexity and points of inflexion, Curvature of plane curve, Radius of curvature (Cartesian and Parametric forms), Centre of curvature of plane curves (Cartesian form).	
Unit-IV	Successive Differentiation and Mean Value Theorems:	15Hrs.
	The n^{th} derivatives of standard functions: e^{ax+b} , $(ax+b)^n$, $\log(ax+b)$, $\sin(ax+b)$, $\cos(ax+b)$, $e^{ax}\sin(bx+c)$, $e^{ax}\cos(bx+c)$ with examples, Leibnitz theorem and its applications. Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem and related problems. Taylor's theorem with Schlomitch and Roche form of remainder (statement only) Taylor's series, Maclaurin's expansions.	

Recommended Books:

1. Theory of Matrices, B.S. Vatsa and S. Vatsa, New Age International(P) Ltd.,2010.
2. Matrices, A.R.Vasista and A.K.Vasista, Krishna Prakashan Media (P) Ltd.,2013.
3. Principles of Mathematical Analysis, W. Rudin, McGraw Hill Edu.,2023.
4. Mathematical Analysis, S.C.Malik and Savita Arora, New Age International(P)Ltd., 2021.
5. Introduction to Real Analysis, S.K.Mapa, Leveant Book Publishers,2022.
6. Differential Calculus, Shanti Narayan and P.K.Mittal,S.Chand & Co.,2022.
7. The Elements of Calculus, D.C. Pavate and G.V.Bhagwat, Popular Prakashan,1956.
8. Schaum's Outlines of Calculus, E.Mendelson,McGrawHill,2021.
9. A Course in B.Sc. Mathematics-I,S.S. Bhoosnurmath, C.S.Salimath and V.S.Shetiya EBPB, 2015.
10. Objective Mathematics – Differential Calculus and Integral Calculus, K. B. Pandey, A. K. Singh and V. Yadav, Pragati Prakashan, 2020.
11. A Course in B.Sc. Mathematics-I,C.S.Salimath,EBPB,2020.

Formative Assessment for Theory	
Assessment Occasion / Type	Marks
Internal Assessment Test-1	05
Internal Assessment Test-2	05
Assignment	10
Total	20Marks
Formative Assessment as per guidelines	

B.Sc. Semester-I

Subject: MATHEMATICS

Discipline Specific Core Course (DSC)

Course Title: Practical on Algebra-I and Calculus-I

Course Code: CC1MAT1P1 (Practical)

Type of Course	Theory /Practical	Credits	Instruction hours per week	Total No. of Lectures / Hours per Semester	Duration of Sem End Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
DSC-1 (P1)	Practical	02	04	56 Hrs.	03 Hrs.	10	40	50

Course Outcomes (COs): After completion of course (Practical), students will be able to:

CO1: Learn Scilab software, which is free and open source software for computer programming.

CO2: Solve problem on algebra and calculus using Scilab software.

CO3: Acquire knowledge of applications of algebra and calculus through Scilab software.

CO4: Calculate rank and row reduced echelon forms.

CO5: Evaluate the radius and Centre of curvatures in Cartesian form.

CO6: Obtain the Maclaurin's series expansions.

List of Experiments

[Each will have 4hrs./Week (Minimum 12 experiments)]

1. Program to compute addition and subtraction of matrices.
2. Program to compute multiplication of matrices.
3. Program to compute rank of matrix and row reduced echelon form.
4. Program to check whether the given function is continuous at a point or not.
5. Program to solve examples based on Intermediate value theorem.
6. Program to find a length of perpendicular from pole to the tangent.
7. Program to find the angle between the radius vector and tangent.
8. Program to find the radius of curvatures of the given curves (Cartesian form).
9. Program to find the coordinates of centre of curvatures of the given curves (Cartesian form)
10. Program to find the n^{th} derivative of e^{ax+b} . and trigonometric functions.
11. Program to find the n^{th} derivative of $e^{ax}\sin(bx+c)$ and $e^{ax}\cos(bx+c)$.
12. Program to find the Maclaurin's expansions of the given functions.

Recommended Books:

1. Scilab by Example, M. Affouf, Create Space Independent Publishing Platform, 2012.
2. Scilab (A free software to Matlab), H. Ramchandran and A.S. Nair, S. Chand &Co., 2018.
3. Scilab–A Beginner’s Approach, A.K. Verma, Cengage Learning India Pvt.Ltd., 2018.
4. Programming in Scilab, R.Goyal and M.Dhingra, Narosa Publishing, 2019.
5. Computing in Scilab, C. Jain, Cambridge University Press, 2022.
6. University Algebra, N.S. Gopalakrishnan, New Age International (P)Limited,2018.
7. Theory of Matrices, B.S. Vatsa and S. Vatsa, New Age International(P)Ltd.,2010.
8. Matrices, A.R. Vasista and A.K. Vasista, Krishna Prakashan Media (P)Ltd.,2013.
9. Principles of Mathematical Analysis, W. Rudin, Mc Graw Hill Edu., 2023.
10. Mathematical Analysis, S.C. Malik and Savita Arora, New Age International(P)Ltd., 2021.

General Instructions**Software to be used: SCILAB****Scheme of Practical Examination (Distribution of Marks)**

Formative Assessment for Practical	
Assessment Occasion/Type	Marks
Program writing and problem solving (1 Program)	03
Program Execution	03
Viva	02
Journal	02
Total	10Marks
<i>Formative Assessment as per guidelines.</i>	

Summative Assessment for Practical	
Assessment Occasion/Type	Marks
Program writing and problem solving (2 Programs)	(5+5)*2=20
Program Execution (Any 1 Program)	10
Viva	05
Journal	05
Total	40Marks
<i>Summative Assessment as per guidelines.</i>	

B.Sc. Semester–II
Subject: MATHEMATICS
Discipline Specific Core Course (DSC)
Course Title: Real Analysis-I and Calculus–II
Course Code: CC2MAT1T1 (Theory)

Type of Course	Theory /Practical	Credits	Instruction hours per week	Total No. of Lectures / Hours per Semester	Duration of Sem End Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
DSC–2 (T2)	Theory	03	04	60 Hrs.	03 Hrs.	20	80	100

Course Outcomes (COs): After completion of course (Theory), students will be able to:

CO 1: Learn countable and uncountable sets.

CO 2: Understand the concepts of open set, closed set, etc.

CO 3: Study the applications of definite integrals to areas, volumes and surface of revolution.

CO 4: Learn maxima and minima of the functions of two variables.

CO 5: Find the extreme values of the functions.

CO 6: Understand the concepts of gradient, divergence and curl.

Unit	Title: Real Analysis-I and Calculus–II	60Hours / Sem
Unit–I	Introduction to Real Analysis:	15Hrs.
	Real line, Field and order axioms, Intervals, Bounded and unbounded sets, Supremum and infimum of a set, Completeness property of $\mathbb{R}$, Archimedean property of $\mathbb{R}$. Absolute value of $\mathbb{R}$ – Standard theorems, Neighbourhood of a point, Interior point of a set, Open set, Closed set, Limit points of a set, Bolzano-Weierstrass theorem (statement only), Countable and uncountable sets - Standard theorems.	
Unit–II	Integral Calculus:	15Hrs.
	Reduction Formulae, application of definite integrals to areas, volumes and Surface of revolution, Length of plane curves.	
Unit–III	Multivariate Calculus:	15Hrs.
	Functions of two or more variables, Partial derivatives of implicit and composite functions, Euler's theorem and its extension, Total differentials, Jacobians and standard properties and illustrative examples, Taylor's and Maclaurin's series for functions of two variables (Statement Only), Maxima-Minima of functions of two variables, Lagrange's method of undetermined multipliers.	

Unit–IV	Vector Calculus:	15Hrs.
	Dot and cross product of vectors. Ordinary derivatives of vectors. Continuity and differentiability of a vector function. Derivatives of sum, dot product. Cross product and triple products of vectors. Differential of vectors. The vector differential operator ∇ . The gradient, Divergence and curl. Solenoidal and Irrotational vectors.	

Recommended Books:

1. Real Analysis, N.P.Bali (Golden Maths Series), New Age International Publishers, 2023.
2. Real Analysis, M.L.Khanna and S.K.Pundir, Jai Prakash Nath & Co. Meerut, 2014.
3. Introduction to Real Analysis, R.G.Bartle and D.R.Sherbert, Wiley, 2021.
4. Integral Calculus, Shanti Narayan and P.K. Mittal, S. Chand and Co. Pvt. Ltd., 2005.
5. Integral Calculus, S.K. Pundir and B. Singh, Pragati Prakashan, 2020.
6. Differential Calculus, Shanti Narayan and P. K. Mittal, S. Chand & Company, New Delhi, 2022.
7. Schaum's Outlines of Calculus, E. Mendelson, Mc GrawHill, 2021.
8. Vector Calculus, J.N. Sharma and A.R. Vasishtha, Krishna Prakashan, 2020.
9. A Text book of Vector Calculus, Shanti Narayan and P.K. Mittal, Visionias, 2023.
10. Vector Calculus, R.K. Pandey, Oxford Publications, 2012.
11. A Course in B.Sc. Mathematics-II, S. S. Bhoosnurmath, C. S. Salimath and V. S. Shetiya, EBPB, 2016.
12. A Text Book of B.Sc. Mathematics, G.K. Ranganath, S. Chand Publications, 2009.
13. Mathematical Methods, S.K.Pundir and B.Singh, Pragati Prakashan, 2020.
14. A Course in B.Sc. Mathematics-II, C.S. Salimath, EBPB, 2021.
15. Objective Mathematics – Differential Calculus and Integral Calculus, K. B. Pandey, A. K. Singh and V. Yadav, Pragati Prakashan, 2020.

Formative Assessment for Theory	
Assessment Occasion / Type	Marks
Internal Assessment Test-1	05
Internal Assessment Test-2	05
Assignment	10
Total	20Marks
Formative Assessment as per guidelines	

B.Sc. Semester–II

Subject: MATHEMATICS

Discipline Specific Core Course (DSC)

Course Title: Practical on Real Analysis-I and Calculus–II

Course Code: CC2MAT1P1 (Practical)

Type of Course	Theory /Practical	Credits	Instruction hours per week	Total No. of Lectures / Hours per Semester	Duration of Sem End Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
DSC–2 (P2)	Practical	02	04	56Hrs.	03Hrs.	10	40	50

Course Outcomes (COs): After completion of course (Practical), students will be able to:

CO 1: Learn Scilab software, which is free and open source software for computer programming.

CO 2: Acquire knowledge of applications of real analysis.

CO 3: Apply reduction formulae to evaluate integrals.

CO 4: Verify Euler’s theorem and its extension for homogeneous functions.

CO 5: Analyse the dot and cross products of vectors.

List of Experiments

[Each will have 4 Hrs./Week (Minimum 12 experiments)]

1. Program to find infimum and supremum of a set by suitable examples.
2. Program to check whether a set is bounded or unbounded.
3. Program to compute the absolute value of a real number.
4. Program on reduction formulas for $\int \sin^n x dx$ and $\int \cos^n x dx$ (for all positive values of n) with suitable examples.
5. Program on reduction formulas $\int_0^{\pi/2} \sin^n x dx$ and $\int_0^{\pi/2} \cos^n x dx$ (for all positive odd and even integral values of n) with suitable examples.
6. Program on reduction formulas for $\int \tan^n x dx$ and $\int \cot^n x dx$ (for all positive values of n) with suitable examples.
7. Program to find First order Partial derivatives of function $f(x, y)$
8. Program to verify the Euler’s theorem and its extension for homogeneous functions.
9. Program to compute the Jacobian of two function w.r.t. two variables.
10. Program to find the dot product, Cross product and triple products of vectors.

11. Program to verify whether a vector field is Solenoidal or irrotational.
12. Program to find gradient, divergence and curl.

Recommended Books:

1. Scilab by Example, M.Affouf, Create Space Independent Publishing Platform, 2012.
2. Scilab (A free software to Matlab), H. Ramchandran and A.S.Nair, S.Chand & Co., 2018.
3. Scilab—A Beginner's Approach, A.K.Verma, Cengage Learning India Pvt. Ltd., 2018.
4. Programming in Scilab, R.Goyal and M. Dhingra, Narosa Publishing, 2019.
5. Computing in Scilab, C. Jain, Cambridge University Press, 2022.
6. Vector Calculus, J.N.Sharma and A.R.Vasishtha, Krishna Prakashan, 2020.
7. Integral Calculus, Shanti Narayan and P.K. Mittal, S. Chand and Co.Pvt. Ltd., 2005.
8. Differential Calculus, Shanti Narayan and P.K.Mittal, S.Chand & Co., New Delhi, 2022.
9. Schaum's Outlines of Calculus, E. Mendelson, Mc Graw Hill, 2021.
10. A Text Book of B.Sc. Mathematics, G.K.Ranganath, S.Chand Publications, 2009.

General Instructions

Software to be used: SCILAB

Scheme of Practical Examination (Distribution of Marks)

Formative Assessment for Practical	
Assessment Occasion/Type	Marks
Program writing and problem solving (1 Program)	03
Program Execution	03
Viva	02
Journal	02
Total	10Marks
<i>Formative Assessment as per guidelines.</i>	

Summative Assessment for Practical	
Assessment Occasion/Type	Marks
Program writing and problem solving (2 Programs)	(5+5)*2=20
Program Execution (Any 1 Program)	10
Viva	05
Journal	05
Total	40 Marks
<i>Summative Assessment as per guidelines</i>	

B.Sc. Semester –II/III/IV
Subject: MATHEMATICS
SKILL ENHANCEMENT COURSE (SEC)
(Student shall study this SEC in any one of the Semesters
either in II or III or IV semester and College shall decide to
allot the students)
Course Title: Programming with GNU Octave Course
Code: CC0MAT6P1 (Practical)

Type of Course	Theory /Practical	Credits	Instruction hours per week	Total No. of Lectures / Hours per Semester	Duration of Sem End Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
SEC	Practical	02	04	56Hrs.	03Hrs.	10	40	50

Course Outcomes (COs): After completion of course(Practical),students will be able to:

CO1: Learn GNU Octave Software (FOSS) for computer programming.

CO2: Solve problems on Algebra, Calculus by using GNU Octave.

CO3: Verify mathematical concepts and theorems using GNU Octave.

CO4: Apply problem-solving skills using GNU Octave.

List of Experiments

[Each will have 4Hrs/Week (Minimum 12 experiments)]

1. Program to compute addition and subtraction of two matrices.
2. Program to compute multiplication of two matrices.
3. Program to check whether the given function is continuous at a point or not.
4. Program to find the angle between the radius vector and tangent.
5. Program to find the radius of curvatures of the given curves
6. Program to find the n^{th} derivative of e^{ax} and trigonometric functions.
7. Program on reduction formulas $\int_0^{\pi/2} \sin^n x dx$ and $\int_0^{\pi/2} \cos^n x dx$ (for all positive odd and even integral values of n) with suitable examples.
8. Program to solve examples using Euler's theorem.
9. Program to find First order Partial derivatives of function $f(x, y)$
10. Program to compute the Jacobin of two function w.r.t. two variables.
11. Program to find the dot product, Cross product and triple products of vectors.
12. Program to verify whether a vector field Solenoidal or irrotational.

Recommended Books:

1. Introduction to Octave, N. Sandeep, APress, 2017.
2. Scientific Computing with Matlab and Octave, A. Quarteroni, Springer, 2010.
3. Essential Matlab and Octave, J. Rogel-Salazar, CRC Press, 2018.
4. GNU Octave by Example, A. Pajankar, APress, 2020.
5. Octave and Matlab for Engineering Applications, A. Stahel, Springer, 2022.
6. Differential Calculus, Shanti Narayan and P. K. Mittal, S. Chand & Company, New Delhi, 2022.
7. Modern Algebra, S. Singh and Q. Zameeruddin, Vikas Publishing House Pvt. Ltd., 2006.
8. Vector Calculus, J. N. Sharma and A. R. Vasishtha, Krishna Prakashan, 2020.

General Instructions

Software to be used: GNU OCTAVE

Scheme of Practical Examination (Distribution of Marks)

Formative Assessment for Practical	
Assessment Occasion/Type	Marks
Program writing and problem solving (1 Program)	03
Program Execution	03
Viva	02
Journal	02
Total	10 Marks
<i>Formative Assessment as per guidelines.</i>	

Summative Assessment for Practical	
Assessment Occasion/Type	Marks
Program writing and problem solving (2 Programs)	$(5+5)*2=20$
Program Execution (Any 1 Program)	10
Viva	05
Journal	05
Total	40 Marks
<i>Summative Assessment as per guidelines.</i>	

B.Sc. Programme: 2026-27

GENERAL PATTERN OF THEORY QUESTION PAPER FOR DSC
(80 Marks for Semester-End Examination with 03 Hrs duration)

Part-A

1. Question Numbers 1-10 carry 2 marks each. :20 Marks

Part-B

2. Question Numbers 11-18 carry 05 Marks each. Answer any 06 questions :30 Marks

Part-C

3. Question Numbers 19-22 carry 10 Marks each. Answer any 03 questions :30 Marks

(Minimum 1 question from each unit and 10 marks question may have Sub-questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 80 Marks

Note: Equal weightage shall be given to each unit based on number of hours prescribed.
