Govt. Maharshi Valmiki P.G. College, Bhanupratappur, Dist.- Uttar Bastar Kanker (C.G.) 494669

Accredited as "B" Grade by NAAC

List of Elective Course

S.No.	Programme Code	Programme Name	Class	Elective Course/Subject
1	UGBA	B.A.	B.A. Part - I, II, III	Any Three of the following subjects :- 1. Hindi Literature 2. English Literature 3. Sociology 4. Economics 5. Political Science
2	UGBC	B.COM.	B.COM. Part – III	Any One of the following Optional Group :- Optional Group A (Finance Area) I. Financial Management II. Financial Market Operations Optional Group B (Marketing Area) I. Principles of Marketing II. International Marketing Optional Group C (Commercial Area) I. Information Technology and its Applications in Business II. Essential of E-commerce Optional Group D (Money Banking and Insurance Area) I. Fundamental of Insurance II. Money and Banking System
3	UGBS	B.SC.	B.SC. Part – I, II, III B.Sc. Part – III	Any Three of the following subjects :- 1. Botany 2. Zoology 3. Chemistry 4. Physics 5. Mathematics Mathematics (For paper III) Any One of the following four optional papers :- 1. Principles of Computer Science 2. Discrete Mathematics 3. Programming in C and Numerical Analysis 4. Practical Programming in C and Numerical Analysis
4	MSLZ	M.SC. (ZOOLOGY)	M.Sc. (Zoology) IV Semester	Any One of the following papers :- 1. Elective A : Fish and Fisheries and Aquaculture 2. Elective B : Insect Biology and Physiology

(Dr. Rashmi Singh)
principal,
Government Maharishi Valmiki P.G. College
Bhanupratappur, District-Uttar Bastar Kanker (C.G.) 494669.

PRINCIPAL
Govt. Maharshi Valmiki P.G. College
Bhanupratappur (Dist. Uttar Bastar Kanker) (C.G.)

2. शिक्षण का पाठ्यक्रम :-

निम्नलिखित विषयों में महाविद्यालय में अध्ययन किया जाता है। पाठ्यक्रम विश्वविद्यालय की परीक्षा के लिए स्वीकृत पाठ्य पर आधारित है। प्रत्येक छात्र से यह अपेक्षा की जाती है कि वह संबंधित पाठ्य-पुस्तकों की व्यवस्था करें।

(अ) बी.ए. भाग 1, 2 एवं 3

(ब) बी.एस.सी. भाग 1, 2 एवं 3

(स) बी कॉम. भाग 1, 2 एवं 3

बी.कॉम/बी.ए./बी.एस.सी. भाग 1, 2 एवं 3 के लिए पुस्तकों का अनुदान आयोग निर्धारित त्रिवर्षीय एकीकृत पाठ्यक्रम।

सभी संकायों के बी.ए./बी.एस.सी./बी.कॉम. कक्षाओं में आधार पाठ्यक्रम अनिवार्य विषयों के रूप में रहेगा पहला घटक हिन्दी भाषा तथा दूसरा घटक अंग्रेजी भाषा (संदर्भ भाषा के रूप में रहेगा विद्यार्थी को तीनों वर्ष ये दोनों भाषा पढ़नी होगी। प्रत्येक भाषा का प्रतिवर्ष 75 अंको का प्रश्नपत्र होगा। इनके अंक श्रेणी में जुड़ेंगे। आधार पाठ्यक्रम सभी संकाय के लिए एक समान होंगे। साथ ही इन दोनों विषयों में विद्यार्थियों को अलग-अलग उत्तीर्ण होना आवश्यक होगा।

मुख्य विषय किसी संकाय के संदर्भित अध्यादेश के अनुसार चयन होंगे। बी.ए./बी.एस.सी. के समूह निर्धारित है। छात्र कोई तीन विषय चयन करेंगे। प्रत्येक 75-75 अंकों के प्रश्न-पत्र होंगे।

नये पाठ्यक्रम को लागू करने पर स्थिति इस प्रकार होगी -

विषय	प्रश्न-पत्र	अंक
आधार पाठ्यक्रम		75
आधार पाठ्यक्रम		75
वैकल्पित विषय	प्रथम	75-75 या 50-5
वैकल्पित विषय	द्वितीय	75-75 या 50-5
वैकल्पित विषय	तृतीय	75-75 या 50-5
प्रायोगिक यदि हो तो, तीनों विषयों में		50-50-50
इस प्रकार कुल अंक संख्या तीनों (प्रायोगिक यदि हो		450
कुल योग		300
यदि प्रायोगिक हो		300
यदि प्रायोगिक न हो		450

सभी सैद्धांतिक प्रश्न-पत्रों में और प्रायोगिक परीक्षाओं में अलग-अलग उत्तीर्ण होना आवश्यक है परीक्षा में श्रेणी, प्रथम द्वितीय एवं तृतीय वर्ष के कुल प्राप्तांको के आधार पर प्रदान की जावेगी।

(घ) बी.ए.प्रथम, द्वितीय, तृतीय भाग के विद्यार्थी निम्नांकित मुख्य वैकल्पिक विषयों में कोई तीन विषय चयन करेंगे अंग्रेजी, हिन्दी, राजनीति शास्त्र, समाजशास्त्र, अर्थशास्त्र, हिन्दी साहित्य।

(च) बी.एस.सी.प्रथम द्वितीय एवं तृतीय भाग के विद्यार्थी निम्नांकित मुख्य वैकल्पिक विषयों में कोई तीन विषय चयन करेंगे भौतिकी, रसायन, गणित, वनस्पति शास्त्र, प्राणी-शास्त्र।

(छ) बी.कॉम.प्रथम भाग एवं द्वितीय भाग के विद्यार्थियों को सी अनिवार्य विषय पढ़ने होंगें।

Principal
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Bhanupratappur, U.B.Kanker (C.G.)

SYLLABUS
B.COM. PART-III

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
Foundation Course			
I. Hindi Language		75	26
II. English Language		75	26
Compulsory Groups			
Group-I			
I. Income Tax	75	150	50
II. Auditing	75		
Group-II			
I. Indirect Taxes with GST	75	150	50
II. Management Accounting	75		
Group-III Optional			
Option Group A (Finance Area)			
I. Financial Management	75	150	50
II. Financial Market Operations	75		
Option Group B (Marketing Area)			
I. Principles of Marketing	75	150	50
II. International Marketing	75		
Option Group C (Commercial Area)			
I. Information Technology and its Applications in Business	75	150	50
II. Essential of e-Commerce	75		
Option Group D (Money Banking & Insurance Area)			
I. Fundamental of Insurance	75	150	50
II. Money & Banking System	75		

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2. शिक्षण का पाठ्यक्रम :-

निम्नलिखित विषयों में महाविद्यालय में अध्ययन किया जाता है। पाठ्यक्रम विश्वविद्यालय की परीक्षा के लिए स्वीकृत पाठ्यक्रम पर आधारित है। प्रत्येक छात्र से यह अपेक्षा की जाती है कि वह स्वयं अपने अध्ययन-पुस्तकों की व्यवस्था करें।

(अ) बी.ए. भाग 1, 2 एवं 3

(ब) बी.एस.सी. भाग 1, 2 एवं 3

(स) बी कॉम. भाग 1, 2 एवं 3

बी.कॉम/बी.ए./बी.एस.सी. भाग 1, 2 एवं 3 के लिए पुस्तकों हेतु अनुदान आयोग निर्धारित त्रिवर्षीय एकीकृत पाठ्यक्रम।

सभी संकायों के बी.ए./बी.एस.सी./बी.कॉम. कक्षाओं में आधार पाठ्यक्रम अनिवार्य विषयों के रूप में रहेगा। पहला घटक हिन्दी भाषा तथा दूसरा घटक अंग्रेजी भाषा (संदर्भ भाषा के रूप में रहेगा विद्यार्थी को तीनों वर्ष ये दोनों भाषा पढ़नी होगी। प्रत्येक भाषा का प्रतिवर्ष 75 अंको का प्रश्नपत्र होगा। इनके अंक श्रेणी में जुड़ेंगे। आधार पाठ्यक्रम सभी संकाय के लिए एक समान होंगे। साथ ही इन दोनों विषयों में विद्यार्थियों को अलग-अलग उत्तीर्ण होना आवश्यक होगा।

मुख्य विषय किसी संकाय के संदर्भित अध्यादेश के अनुसार चयन होंगे। बी.ए./बी.एस.सी. के समूह निर्धारित है। छात्र कोई तीन विषय चयन करेंगे। प्रत्येक 75-75 अंकों के प्रश्न-पत्र होंगे।

नये पाठ्यक्रम को लागू करने पर स्थिति इस प्रकार होगी -

विषय	प्रश्न-पत्र	अंक
आधार पाठ्यक्रम		75
आधार पाठ्यक्रम		75
वैकल्पित विषय	प्रथम	75-75 या 50-5
वैकल्पित विषय	द्वितीय	75-75 या 50-5
वैकल्पित विषय	तृतीय	75-75 या 50-5
प्रायोगिक यदि हो तो, तीनों विषयों में		50-50-50
इस प्रकार कुल अंक संख्या तीनों (प्रायोगिक यदि हो)		450
कुल योग		300
यदि प्रायोगिक हो		300
यदि प्रायोगिक न हो		450

सभी सैद्धांतिक प्रश्न-पत्रों में और प्रायोगिक परीक्षाओं में अलग-अलग उत्तीर्ण होना आवश्यक है परीक्षा में श्रेणी, प्रथम द्वितीय एवं तृतीय वर्ष के कुल प्राप्तांको के आधार पर प्रदान की जावेगी।

(घ) बी.ए.प्रथम, द्वितीय, तृतीय भाग के विद्यार्थी निम्नांकित मुख्य वैकल्पिक विषयों में कोई तीन विषय चयन करेंगे अंग्रेजी, हिन्दी, राजनीति शास्त्र, समाजशास्त्र, अर्थशास्त्र, हिन्दी साहित्य।

(च) बी.एस.सी.प्रथम द्वितीय एवं तृतीय भाग के विद्यार्थी निम्नांकित मुख्य वैकल्पिक विषयों में कोई तीन विषय चयन करेंगे भौतिकी, रसायन, गणित, वनस्पति शास्त्र, प्राणी-शास्त्र।

(छ) बी.कॉम.प्रथम भाग एवं द्वितीय भाग के विद्यार्थियों को सी अनिवार्य विषय पढ़ने होंगे।

Principal
Govt. Maharishi Valmiki P.G.Collage
Bhanupratappur, U.B.Kanker (C.G.)

B.A./B.Sc. Part-III
MATHEMATICS
PAPER - III (OPTIONAL)
(I) PRINCIPLES OF COMPUTER SCIENCE

UNIT-I **Data Storage** - Storage of bits. Main Memory. Mass Storage. Coding Information of Storage. The Binary System. Storing integers, storing fractions, communication errors.
Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer-Peripheral Communication.

UNIT-II **Operating System and Networks** - The Evolution of Operating System. Operating System Architecture. Coordinating the Machine's Activities. Handling Competition Among Process. Networks. Networks Protocol.
Software Engineering - The Software Engineering Discipline. The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation. Software Ownership and Liability.

UNIT-III **Algorithms** - The Concept of an Algorithm, Algorithm Representation. Algorithm Discovery. Iterative Structures. Recursive Structures. Efficiency and Correctness. (Algorithms to be implemented in C++). **Programming Languages** - Historical Perspective. Traditional Programming Concepts, Program Units. Language Implementation. Parallel Computing. Declarative Computing.

UNIT-IV **Data Structures** - Arrays. Lists. Stacks. Queues. Trees. Customised Data Types. Object Oriented Programming.
File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role of the Operating System.
Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model. Object-Oriented Database. Maintaining Database Integrity. E-R models

UNIT-V **Artificial Intelligence** - Some Philosophical Issues. Image Analysis. Reasoning. Control System Activities. Using Heuristics. Artificial Neural Networks. Application of Artificial Intelligence.
Theory of Computation - Turning Machines. Computable functions. A Non computable Function. Complexity and its Measures. Problem Classification.

REFERENCES:

1. J. Glen Brook hear, Computer Science: An Overview, Addition -Wesley.
2. Stanley B. Lippmann, Josee Lojoie, C++ Primer (third Edition), Addison-Wesley.

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B.A./B.Sc. Part-III
MATHEMATICS
PAPER - III (OPTIONAL)
(II) DISCRETE MATHEMATICS

UNIT-I **Sets and Propositions** - Cardinality. Mathematical Induction, Principle of inclusion and exclusion. **Computability and Formal Languages** - Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II **Relations and Functions** - Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.
Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs. Trees.

UNIT-III **Finite State Machines** - Equivalent Machines. Finite State Machines as Language Recognizers. **Analysis of Algorithms** - Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV **Recurrence Relations and Recursive Algorithms** - Linear Recurrence Relations with constant coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V **Boolean Algebras** - Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES:

1. C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986

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B.A./B.Sc. Part-III
MATHEMATICS
PAPER - III (OPTIONAL)
(III) PROGRAMMING IN C AND NUMERICAL ANALYSIS
(Theory & Practical)
Theory component will have maximum marks 30.
Practical component will have maximum marks 20.

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II **Solution of Equations:** Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials. **Interpolation:** Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulas using Differences. Numerical Differentiation. Numerical Quadrature: Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III **Linear Equations:** Direct Methods for Solving Systems of Linear Equations (Guass Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).
The Algebraic Eigen value problem: Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

UNIT-IV **Ordinary Differential Equations:** Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.
Approximation: Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Monte Carlo Methods

UNIT-V Random number generation, congruential generators, statistical tests of pseudo-random numbers. Random variate generation, inverse transform method, composition method, acceptance rejection method, generation of exponential, normal variates, binomial and Poisson variates.
Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo integration.

REFERENCES:

1. Henry Mulish and Herbert L. Cooper, Spirit of C: An Introduction to Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie. The C Programming Language 2nd Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C: A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutchisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988.

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B.A./B.Sc. Part-III
MATHEMATICS
PAPER - III (OPTIONAL)
(IV) PRACTICAL
PROGRAMMING IN C AND NUMERICAL ANALYSIS

LIST OF PRACTICAL TO BE CONDUCTED...

1. Write a program in C to find out the largest number of three integer numbers.
2. Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules :
   Monthly Salary Income Tax
   9000 or more 40% of monthly salary
   7500 or more 30% of monthly salary
   7499 or less 20% of monthly salary
3. Write a program in C that reads a year and determine whether it is a leap year or not.
4. Write a program in C to calculate and print the first n terms of Fibonacci series using looping statement.
5. Write a program in C that reads in a number and single digit. It determines whether the first number contains the digit or not.
6. Write a program in C to computes the roots of a quadratic equation using case statement.
7. Write a program in C to find out the largest number of four numbers using function.
8. Write a program in C to find the sum of all the digits of a given number using recursion.
9. Write a program in C to calculate the factorial of a given number using recursion.
10. Write a program in C to calculate and print the multiplication of given 2D matrices.
11. Write a program in C to check that whether given string palindrome or not.
12. Write a Program in C to calculate the sum of series:

$$1 + x + \frac{1}{2!}x^2 + \frac{1}{3!}x^3 + \ldots\ldots + \frac{1}{n!}x^n$$

13. Write a program in C to determine the grade of all students in the class using Structure. Where structure having following members - name, age, roll, sub1, sub2, sub3, sub4 and total.
14. Write a program in C to copy one string to another using pointer. (Without using standard library functions).
15. Write a program in C to store the data of five students permanently in a data file using file handling.

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Syllabus of

M.Sc. ZOOLOGY

2 Year/4 Semester Postgraduate Degree Programme/Course
Under the Faculty of Life Science
For Affiliated Colleges of Shaheed Mahendra Karma Vishwavidyalaya, Bastar, Jagdalpur

FIRST SEMESTER

	Paper No.	Title of Papers	Marks	
			External	Internal
FIRST SEMESTER	I	Biosystematics, Taxonomy and Biodiversity	80	20
	II	Structure and Function of Invertebrates	80	20
	III	General and Comparative Endocrinology of Vertebrates	80	20
	IV	Gamete Biology & Reproductive Physiology in Human Beings	80	20
	LC-I	Lab Course I (Based on Paper I & II)	80	20
	LC-II	Lab Course II (Based on Paper III & IV)	80	20
		Total	480	120

SECOND SEMESTER

	Paper No.	Title of Papers	Marks	
			External	Internal
SECOND SEMESTER	I	Molecular Cell Biology and Biotechnology	80	20
	II	Tools and Techniques in Biology	80	20
	III	Quantitative Biology and Computer Application	80	20
	IV	Immunology and Development Biology	80	20
	LC-I	Lab Course I (Based on Paper I & II)	80	20
	LC-II	Lab Course II (Based on Paper III & IV)	80	20
		Total	480	120

THIRD SEMESTER

	Paper No.	Title of Papers	Marks	
			External	Internal
THIRD SEMESTER	I	Comparative Anatomy of Vertebrates	80	20
	II	Animal Behaviour	80	20
	III	Environment Physiology and Population Ecology	80	20
	IV	Population Genetics and Evolution	80	20
	LC-I	Lab Course I (Based on Paper I & II)	80	20
	LC-II	Lab Course II (Based on Paper III & IV)	80	20
		Total	480	120

FOURTH SEMESTER
ELECTIVE A: FISH AND FISHERIES AND AQUACULTURE

	Paper No.	Title of Papers	Marks	
			External	Internal
	I	Limnology and Ecotoxicology	80	20

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	II	Ichthyology	80	20
	III	Capture Fisheries	80	20
	IV	Aquaculture and Culture Fisheries	80	20
	LC-I	Lab Course I (Based on Paper I & II)	80	20
	LC-II	Lab Course II (Based on Paper III & IV)	80	20
		Total	480	120
		Grand Total Semester I+II+III+IV = 2400	1920	480

FOURTH SEMESTER

ELECTIVE B: INSECT BIOLOGY AND PHYSIOLOGY

	Paper No.	Title of Papers	Marks	
			External	Internal**
FOURTH SEMESTER	I	Characteristics, Classification and Types of Insects	80	20
	II	Gross Morphology of Insects	80	20
	III	Insect Physiology	80	20
	IV	Behavior and Economic Importance of Insects	80	20
	LC-I	Lab Course I (Based on Paper I & II)	80	20
	LC-II	Lab Course II (Based on Paper III & IV)	80	20
		Total	480	120
		Grand Total Semester I+II+III+IV = 2400	1920	480

PRINCIPAL
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