

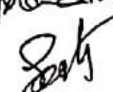


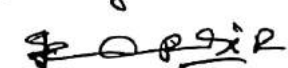


**BENGALURU NORTH UNIVERSITY**  
**Department of Mathematics**

Date: 29-09-2021

**PROCEEDING OF THE BOS (UG) MATHEMATICS**


The meeting of the Board of Studies in UG Mathematics for the year 2021-22 was held on Wednesday, 29<sup>th</sup> September 2021 at 11.00am in the Department of Mathematics, GFGC, K R Puram, Bengaluru North University, Bengaluru. The following members attended the meeting:

- |    |                                |                  |  |
|----|--------------------------------|------------------|--|
| 1. | Dr. B. Chaluvvaraju            | Chairman         |  |
| 2. | Prof. Madhulatha Moses         | Member           |  |
| 3. | Dr. Shivasharanappa Sigarkanti | Member           |   |
| 4. | Prof. Nagaraddi B. Y.          | Member           |  |
| 5. | Prof. Mariya Khibthiya         | Member           |  |
| 6. | Prof. Kemparaju R.             | Member           |  |
| 7. | Dr. Abraham V. M               | Member           |  |
| 8. | Prof. C. Keshava Reddy         | Member (Retired) |  |
| 9. | Prof. Thajmull Pasha           | Member (Retired) |  |

**Agenda and Resolution:**

1. Final draft of the BNU-NEP-UG-Mathematics was checked and discussion held. The suggestions given by the BOS members and Senior Subject Experts Dr. Kemparaju S and Prof. Suguna H G, were incorporated.
2. The syllabus framed as per NEP-2020 and Karnataka State Higher Education Council guidelines. The syllabus prepared by teachers with a practical component (Mathematics practical with FOSS tools for programming). The BOS also resolved to change the list of practical experiments each year. Finally, the syllabus was approved by all the members.
3. The committee approved the updated panel examiners of UG (Mathematics).

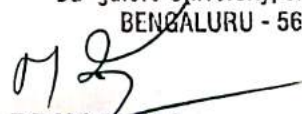
The Chairman thanked the members for their cooperation.

  
[Dr. B. CHALUVARAJU] 29/09/21  
CHAIRMAN  
BNU-BOS in UG-Mathematics

**Dr. B. CHALUVARAJU**  
M.Sc. Ph.D  
Professor  
Department of Mathematics  
Bengaluru North University, Jnanabharathi  
BENGALURU - 560 056.

**Copy to:**

1. The Registrar, Bengaluru North University, Bengaluru
2. The PS to the Vice-Chancellor, Bengaluru North University, Bengaluru

  
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**Contents of B.Sc., (Basic/Honors) with Mathematics as Major Subject  
(Model IIIA)**

Semester	Course No.	Theory/Practical	Credits	Paper Title	Marks	
					S.A.	I.A.
I	MATD SCT1.1	Theory	4	Algebra-I and Calculus-I	70	30
	MATD SCP1.1	Practical	2	Theory based Practical's on Algebra-I and Calculus-I	35	15
	MAT OET1.1	Theory	3	(A) Mathematics-I (B) Business Mathematics-I	70	30
II	MATD SCT2.1	Theory	4	Algebra-II and Calculus-II	70	30
	MATD SCP2.1	Practical	2	Theory based Practical's on Algebra-II and Calculus-II	35	15
	MAT OET2.1	Theory	3	(A) Mathematics-II (B) Business Mathematics-II	70	30
<b>Exit Option with Certificate</b>						
III	MATD SCT3.1	Theory	4	Ordinary Differential Equations and Real Analysis-I	70	30
	MATD SCP3.1	Practical	2	Theory based Practical's on Ordinary Differential Equations and Real Analysis-I	35	15
	MAT OET3.1	Theory	3	(A) Ordinary Differential Equations (B) Quantitative Mathematics	70	30
IV	MATD SCT4.1	Theory	4	Partial Differential Equations and Integral Transforms	70	30
	MATD SCP4.1	Practical	2	Theory based Practical's on Partial Differential Equations and Integral Transforms	35	15
	MAT OET4.1	Theory	3	(A) Partial Differential Equations (B) Mathematical Finance	70	30
<b>Exit Option with Diploma</b>						
V	MATD SCT5.1	Theory	3	Real Analysis and Complex Analysis	70	30
	MATD SCP5.1	Practical	2	Theory based Practical's on Real Analysis and Complex Analysis	35	15
	MATD SCT5.2	Theory	3	Ring Theory	70	30
	MATD SCP5.2	Practical	2	Theory based Practical's on Ring Theory	35	15
	MATD SET5.1	Theory	3	(A) Vector Calculus (B) Mechanics (C) Mathematical Logic	70	30
VI	MATD SCT6.1	Theory	3	Linear Algebra	70	30
	MATD SCP6.1	Practical	2	Theory based Practical's on Linear Algebra	35	15

*M. S.*  
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	MATDSCT6.2	Theory	3	Numerical Analysis	70	30
	MATDSCP6.2	Practical	2	Theory based Practical's on Numerical Analysis	35	15
	MATDSET6.1	Theory	3	(A) Analytical Geometry in 3D (B) Number Theory (C) Special Functions (D) History of Bhâratiya Ganita	70	30
<b>Exit Option with Bachelor of Science (B.Sc.) Basic Degree</b>						
VII	MATDSCT7.1	Theory	3	Discrete Mathematics	70	30
	MATDSCP7.1	Practical	2	Theory based Practical's on Discrete Mathematics	35	15
	MATDSCT7.2	Theory	3	Advanced Ordinary Differential Equations	70	30
	MATDSCP7.2	Practical	2	Theory based Practical's on Advanced Ordinary Differential Equations	35	15
	MATDSCT7.3	Theory	4	Advanced Analysis	70	30
	MATDSET7.1	Theory	3	(A) Graph Theory (B) Entire and Meromorphic Functions (C) General Topology (D) Bhâratiya Trikoṇmiti Śâstra	70	30
	MATDSET7.2	Theory	3	Research Methodology in Mathematics	70	30
VIII	MATDSCT8.1	Theory	4	Advanced Complex Analysis	70	30
	MATDSCT8.2	Theory	4	Advanced Partial Differential Equations	70	30
	MATDSCT8.3	Theory	3	Fuzzy Sets and Fuzzy Systems	70	30
	MATDSET8.1	Theory	3	(A) Operations Research (B) Lattice theory and Boolean Algebra (C) Mathematical Modelling (D) <i>Aṅkapaśa</i> (Combinatorics)	70	30
	MATDSET8.2	Research Project	6(3+3)	Research Project* OR Any Two of the following electives (A) Finite Element Methods (B) Cryptography (C) Information Theory and Coding (D) Graph Theory and Networking	140 OR 70 70	60 OR 30 30
<b>Award of Bachelor of Science (B.Sc.) Honors Degree in Mathematics</b>						


**CURRICULUM STRUCTURE FOR UNDERGRADUATE DEGREE PROGRAM**

**Name of the Degree Program** : **B.Sc., (Basic/Honors)**  
**Discipline/Subject** : **Mathematics**  
**Starting Year of Implementation** : **2021-22**

**PROGRAM ARTICULATION MATRIX**

Semester	Course No.	Programme Outcomes that the Course Addresses	Pre-Requisite Course(s)	Pedagogy*	Assessment**
I	MATDSCT1.1	PO1,PO2,PO3	---	MOOC	CLASSTESTS
II	MATDSCT2.1	PO1,PO2,PO3, PO8	MATDSCT1.1	PROBLEM SOLVING	SEMINAR QUIZ ASSIGNMENT ASSIGNMENTS GROUP DISCUSSION TERM AM ENDEX VIVA-VOCE
III	MATDSCT3.1	PO1,PO4,PO7, PO8	---	SEMINAR	
IV	MATDSCT4.1	PO1,PO4,PO7, PO8	MATDSCT3.1	PROJECT BASED LEARNING	
V	MATDSCT5.1	PO1,PO2,PO3, PO5	---	ASSIGNMENTS	
V	MATDSCT5.2	PO 3, PO 4, PO 7, PO10	MATDSCT2.1	GROUP DISCUSSION	
VI	MATDSCT6.1	PO6, PO 7, PO 10.	MATDSCT5.2		
VI	MATDSCT6.2	PO3,PO 4,PO5, PO 8, PO 9, PO 10.	MATDSCT1.1 & MATDSCT2.1	TERM AM ENDEX	
VII	MATDSCT7.1	PO3,PO4,PO5, PO7,PO9.	MATDSCT1.1 & MATDSCT2.1		
VII	MATDSCT7.2	PO2,PO 4,PO5, PO10	MATDSCT3.1		
VII	MATDSCT7.3	PO2,PO 4,PO5, PO10	MATDSCT3.1	VIVA-VOCE	
VIII	MATDSCT8.1	PO2,PO4,PO5, PO10	MATDSCT5.1		
VIII	MATDSCT8.2	PO2,PO 4,PO5, PO10	MATDSCT4.1		
VIII	MATDSCT8.3	PO2,PO4,PO5, PO10	MATDSCT7.3		

\*\*Pedagogy for student engagement is predominantly Lecture. However, other pedagogies enhancing better student engagement to be recommended for each course. This list includes active learning/course projects / Problem based or Project based Learning / Case Studies / Self Study like Seminar, Term Paper or MOOC.

  
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\*\*\*Every Course needs to include assessment for higher order thinking skills (Applying/Evaluating/Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for Learning).

**B.Sc., (Basic/Honors) with Mathematics as a Minor in the 3<sup>rd</sup> Year**

Semester	Course No.	Theory/Practical	Credits	Paper Title	Marks	
					S.A.	I.A.
V	MATDSCMT5.1	Theory	3	Complex Analysis	70	30
	MATDSCMP5.1	Practical	2	Theory based Practical's on Complex Analysis	35	15
VI	MATDSCMT6.1	Theory	3	Numerical Analysis	70	30
	MATDSCMP6.1	Practical	2	Theory based Practical's on Numerical Analysis	35	15

Abbreviation for MATDSCMT5.1/MATDSCMP5.1: MAT-Mathematics; DSC-Discipline Core; M-Minor; T-Theory/P-Practical; 5-Fifth Semester; 1-Course 1

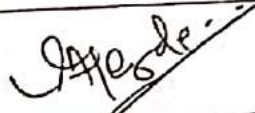


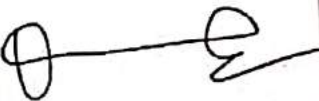

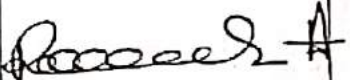

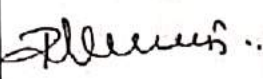

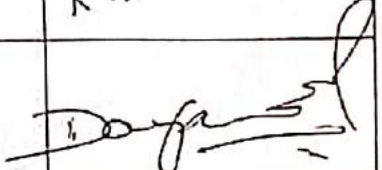

**Credit Distribution for B.Sc., (Basic/Honors) with Mathematics as Major in the 3<sup>rd</sup> Year (For Model IIIA)**

Subject	Semester	Major/Minor in the 3 <sup>rd</sup> Year	Credits					Total Credits
			Discipline Specific Core (DSC)	Open Elective (OE)	Discipline Specific Elective (DSE)	AECC & Languages	Skill Enhancement Courses (SEC)	
Mathematics	I-IV	Major	4 Courses (4+2) x 4 = 24	4 Courses 3 x 4 = 12	---	(4+4=8) Courses 8 x (3+1) = 32	2 Courses 2 x (1+1) = 4	72
Other Subject		Minor	24	--	--	--	--	24
<b>96</b>								
Mathematics	V&VI	Major	4 Courses 4 x (3+2) = 20	----	2 Courses 2 x 3 = 06	---	2 Courses 2 x 2 = 4	30
Other Subject		Minor	10	--	--	--	--	10
<b>(96+40)=136</b>								


*M S*

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The following members attended the BOS meeting.

Sl. No	Name	Designation	Signature
1	Prof. Ganapati Anant Hegde Dept. of Chemistry, TTCD&MS Oorgaum KGF	Chairman	
2	Prof. M. Erappa Dept. of Chemistry, GCW Kolar	Member	
3	Prof. M. Sujatha Dept. of Chemistry, GCW Kolar	Member	
4	Dr. K. R. Muddukrishna, Dept. of Chemistry, GFGC Vijayanagar Bengaluru.	Member	
5	Dr. S. P. Jisha Dept. of Chemistry, GFGC K R Puram Bengaluru.	Member	
6	Prof. A Ravikumar. Dept. of Chemistry, GCW Chintamani	Member	
7	Prof. K. Raghunath. Dept. of Chemistry, GFGC for Boys Chintamani	Member	
8	Prof. Keshava Murthy. Dept. of Chemistry, GCW Chintamani	Member	
9	Prof. R. Nalini Dept. of Chemistry, GFGC K R Puram Bengaluru	Member	
10	Dr. Dayananda. B. P Dept. of Chemistry, GFGC K R Nagara. Mysore	Member	
11	Prof. Prasannakumar Dept. of Chemistry, M.S. Ramaiah College Bengaluru.	Member	

5

  
21.09.23  
**G.A. HEGDE**  
Chairman, BOS  
UG Chemistry,  
BNU Tamaka, KOLAR.

**BENGALURU NORTH UNIVERSITY**  
**Department of Mathematics**

Date: 08-09-2023

**PROCEEDING OF THE BOS (UG) MATHEMATICS**

The meeting of the Board of Studies in UG Mathematics for the year 2023-24 was held on Friday, 8<sup>th</sup> September 2023 at 11.00am in the Department of Mathematics, GFGC, K R Puram, Bangalore North University, Bangalore. The following members attended the meeting:

Sl. No.	Name	Signature
1	Dr. B. Chaluvvaraju, Chairman	B. Chaluvvaraju
2	Prof. Nagaraddi B. Y., Member	Nagaraddi B. Y.
3	Smt. Mariya Khibthiya, Member	Mariya Khibthiya
4	Dr. Kemparaju S., Member	Kemparaju S.
5	Smt. Suguna H. G., Member	Suguna H. G.
6	Dr. Bhargavi P., Member	Bhargavi P.
7	Dr. M. C. Mahesh Kumar, Member	M. C. Mahesh Kumar
8	Dr. Radhika M., Member	Radhika M.
9	Dr. Srinivas Rao, Member	Srinivas Rao
10	Mr. Hanumantha Reddy D. T., Member	Hanumantha Reddy D. T.
11	Dr. Veeranna, Member	Veeranna

**Agenda and Resolution:**


1. Final draft of the UG-Mathematics (V & VI Semester B. Sc.,) was checked and discussion held. The suggestions given by the BOS members and subject experts were incorporated.
  2. The syllabus framed as per UGC and KSHEC guidelines. The syllabus prepared by teachers with a Mathematics practical component, by using Free and Open Source Software (FOSS) packages. The BOS also resolved to change the list of practical experiments each year. Finally, the syllabus was approved by all the members.
  3. The committee approved the updated panel of examiners for UG (Mathematics).
- The Chairman thanked the members for their cooperation.

  
[Dr. B. CHALUVVARAJU] 08/09/2023

CHAIRMAN  
BNU-BOS in UG-Mathematics  
Dr. B. CHALUVVARAJU  
Professor  
Department of Mathematics  
Bangalore University, Chikkaballapur

**Copy to:**

1. The Registrar, Bengaluru North University, Bengaluru
2. The PS to the Vice-Chancellor, Bengaluru North University, Bengaluru

  
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# CURRICULUM STRUCTURE FOR UNDERGRADUATE DEGREE PROGRAM

Name of the Degree Program

: B.Sc.

Discipline/Subject


: Mathematics

Year/Semester

: 3<sup>rd</sup> Year/ V & VI Semester

Semester	Course No.	Theory/ Practical	Credits	Paper Title	Marks	
					S.A.	I.A.
<b>V</b>	<b>MATDSCT5.1</b>	Theory	4	Real Analysis-II and Complex Analysis	60	40
	<b>MATDSCP5.1</b>	Practical	2	Theory based Practical's on Real Analysis-II and Complex Analysis	25	25
	<b>MATDSCT5.2</b>	Theory	4	Vector Calculus and Group Theory	60	40
	<b>MATDSCP5.2</b>	Practical	2	Theory based Practical's on Vector Calculus and Group Theory	25	25
<b>VI</b>	<b>MATDSCT6.1</b>	Theory	4	Ring Theory and Linear Algebra	60	40
	<b>MATDSCP6.1</b>	Practical	2	Theory based Practical's on Ring Theory and Linear Algebra	25	25
	<b>MATDSCT6.2</b>	Theory	4	Numerical Analysis	60	40
	<b>MATDSCP6.2</b>	Practical	2	Theory based Practical's on Numerical Analysis	25	25

**Abbreviation for MATDSCT5.1 / MATDSCP 5.1:** MAT – Mathematics; DSC – Discipline Core; T – Theory /P – Practical; V – Fifth Semester; VI – Sixth Semester.

  
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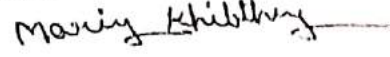





**BENGALURU NORTH UNIVERSITY**  
**Department of Mathematics**

Date: 27-08-2022

**PROCEEDING OF THE BOS (UG) MATHEMATICS**


The meeting of the Board of Studies in UG Mathematics for the year 2022-23 was held on Saturday, 27<sup>th</sup> August 2022 at 11.00am in the Department of Mathematics, Jnanabharathi Campus, Bengaluru University, Bengaluru-56. The following members attended the meeting:

1.	Dr. B. Chaluvvaraju	Chairman	
2.	Prof. Madhulatha Moses	Member	
3.	Dr. Shivasharanappa Sigarkantl	Member	
4.	Prof. Nagaraddl B. Y.	Member	
5.	Prof. Mariya Khibthiya	Member	
6.	Prof. Kemparaju R.	Member	
7.	Dr. Abraham V. M	Member	
8.	Dr. Kemparaju S	Member	
9.	Prof. Suguna H. G.	Member	

**Agenda and Resolution:**


1. Final draft of the BNU-NEP-UG-Mathematics (III & IV Semester B. Sc.) was checked and discussion held. The suggestions given by the BOS members and subject experts were incorporated.
2. The syllabus framed as per NEP-2020 and Karnataka State Higher Education Council guidelines. The syllabus prepared by teachers with a practical component (Mathematics practical with FOSS tools for programming). The BOS also resolved to change the list of practical experiments each year. Finally, the syllabus was approved by all the members.
3. The committee approved the updated panel examiners of UG (Mathematics).

The Chairman thanked the members for their cooperation.

  
[Dr. B. CHALUVVARAJU] 27/08/2022  
Dr. B. CHALUVVARAJU  
M.Sc. Ph.D  
Professor  
Department of Mathematics  
Bengaluru University, Jnanabharathi  
BENGALURU - 560 056.

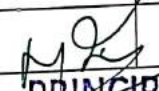
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**Contents of B.Sc., (Basic/ Honors) with Mathematics as  
Major Subject (Model IIA)**

Semester	Course No.	Theory/ Practical	Credits	Paper Title	Marks	
					S.A.	I.A.
I	MATDSCT1.1	Theory	4	Algebra - I and Calculus - I	60	40
	MATDSCP1.1	Practical	2	Theory based Practical's on Algebra -I and Calculus - I	25	25
	MATOET1.1	Theory	3	(A) Mathematics - I (B) Business Mathematics - I	60	40
II	MATDSCT2.1	Theory	4	Algebra - II and Calculus - II	60	40
	MATDSCP2.1	Practical	2	Theory based Practical's on Algebra - II and Calculus - II	25	25
	MATOET2.1	Theory	3	(A) Mathematics - II (B) Business Mathematics-II	60	40
<b>Exit Option with Certificate</b>						
III	MATDSCT3.1	Theory	4	Ordinary Differential Equations and Real Analysis-I	60	40
	MATDSCP3.1	Practical	2	Theory based Practical's on Ordinary Differential Equations and Real Analysis-I	25	25
	MATOET3.1	Theory	3	(A) Ordinary Differential Equations (B) Quantitative Mathematics (C) Vedic Mathematics	60	40
IV	MATDSCT4.1	Theory	4	Partial Differential Equations and Integral Transforms	60	40
	MATDSCP4.1	Practical	2	Theory based Practical's on Partial Differential Equations and Integral Transforms	25	25
	MATOET4.1	Theory	3	(A) Partial Differential Equations (B) Mathematical Finance (C) Mathematics for Social Sciences	60	40
<b>Exit Option with Diploma</b>						
V	MATDSCT5.1	Theory	3	Real Analysis and Complex Analysis	60	40
	MATDSCP5.1	Practical	2	Theory based Practical's on Real Analysis and Complex Analysis	25	25
	MATDSCT5.2	Theory	3	Ring Theory	60	40
	MATDSCP5.2	Practical	2	Theory based Practical's on Ring Theory	25	25
	MATDSET5.1	Theory	3	(A) Vector Calculus (B) Mechanics (C) Mathematical Logic	60	40
VI	MATDSCT6.1	Theory	3	Linear Algebra	60	40
	MATDSCP6.1	Practical	2	Theory based Practical's on Linear Algebra	25	25

  
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MATDSCT6.2	Theory	3	Numerical Analysis	60	40
MATDSCP6.2	Practical	2	Theory based Practical's on Numerical Analysis	25	25
MATDSET6.1	Theory	3	(A) Analytical Geometry in 3D (B) Number Theory (C) Special Functions (D) History of Bhâratîya Gaṇita	60	40

**Exit Option with Bachelor of Arts, B.A./ Bachelor of Science, B.Sc. Degree**

VII	MATDSCT7.1	Theory	3	Discrete Mathematics	60	40
	MATDSCP7.1	Practical	2	Theory based Practical's on Discrete Mathematics	25	25
	MATDSCT7.2	Theory	3	Advanced Ordinary Differential Equations	60	40
	MATDSCP7.2	Practical	2	Theory based Practical's on Advanced Ordinary Differential Equations	25	25
	MATDSCT7.3	Theory	4	Advanced Analysis	60	40
	MATDSET 7.1	Theory	3	(A) Graph Theory (B) Entire and Meromorphic Functions (C) General Topology (D) Bhâratîya Trikoṇmiti Śâstra	60	40
	MATDSET 7.2	Theory	3	Research Methodology in Mathematics	60	40
VIII	MATDSCT8.1	Theory	4	Advanced Complex Analysis	60	40
	MATDSCT8.2	Theory	4	Advanced Partial Differential Equations	60	40
	MATDSCT8.3	Theory	3	Fuzzy Sets and Fuzzy Systems	60	40
	MATDSET 8.1	Theory	3	(A) Operations Research (B) Lattice theory and Boolean Algebra (C) Mathematical Modelling (D) Aṅkapâśa (Combinatorics)	60	40
	MATDSET 8.2	Research Project	6(3+3)	Research Project* OR Any Two of the following electives (A) Finite Element Methods (B) Cryptography (C) Information Theory and Coding (D) Graph Theory and Networking	120 OR 60 60	80 OR 40 40

**Award of Bachelor of Science (B.Sc.) Honors Degree in Mathematics**

## CURRICULUM STRUCTURE FOR UNDERGRADUATE DEGREE PROGRAM

**Name of the Degree Program** : B.Sc. (Honors)  
**Discipline/Subject** : Mathematics  
**Starting Year of Implementation** : 2021-22

### PROGRAM ARTICULATION MATRIX

Semester	Course No.	Programme Outcomes that the Course Addresses	Pre-Requisite Course(s)	Pedagogy*	Assessment**
I	MATDSCT1.1	PO 1, PO 2, PO 3	----	MOOC	CLASS TESTS  SEMINAR  QUIZ  ASSIGNMENT     TERM END EXAM       VIVA-VOCE
II	MATDSCT2.1	PO 1, PO 2, PO 3, PO 8	MATDSCT1.1	PROBLEM SOLVING	
III	MATDSCT3.1	PO 1, PO 4, PO 7, PO 8	-----	SEMINAR	
IV	MATDSCT4.1	PO 1, PO 4, PO 7, PO 8	MATDSCT3.1	PROJECT BASED LEARNING	
V	MATDSCT5.1	PO 1, PO 2, PO 3, PO 5	----	ASSIGNMENTS	
V	MATDSCT5.2	PO 3, PO 4, PO 7, PO 10	MATDSCT2.1	GROUP DISCUSSION	
VI	MATDSCT6.1	PO 6, PO 7, PO 10.	MATDSCT5.2		
VI	MATDSCT6.2	PO 3, PO 4, PO 5, PO 8, PO 9, PO 10.	MATDSCT1.1 & MATDSCT2.1		
VII	MATDSCT7.1	PO 3, PO 4, PO 5, PO 7, PO 9.	MATDSCT1.1 & MATDSCT2.1		
VII	MATDSCT7.2	PO 2, PO 4, PO 5, PO 10	MATDSCT3.1		
VII	MATDSCT7.3	PO 2, PO 4, PO 5, PO 10	MATDSCT3.1		
VIII	MATDSCT8.1	PO 2, PO 4, PO 5, PO 10	MATDSCT5.1		
VIII	MATDSCT8.2	PO 2, PO 4, PO 5, PO 10	MATDSCT4.1		
VIII	MATDSCT8.3	PO 2, PO 4, PO 5, PO 10	MATDSCT7.3		

\*\* Pedagogy for student engagement is predominantly Lecture. However, other pedagogies enhancing better student engagement to be recommended for each course. This list includes active learning/ course projects / Problem based or Project based Learning / Case Studies / Self Study like Seminar, Term Paper or MOOC.

\*\*\* Every Course needs to include assessment for higher order thinking skills (Applying/ Evaluating / Creating). However, this column may contain alternate assessment methods that help formative assessment ( i.e. assessment for Learning).

**B.Sc., (Basic/Honors) with Mathematics as a Minor in the 3<sup>rd</sup> Year**

Course No.	Theory/ Practical	Credits	Paper Title	Marks	
				S.A.	I.A.
MATDSCMT5.1	Theory	3	Complex Analysis	60	40
MATDSCMP5.1	Practical	2	Theory based Practical's on Complex Analysis	25	25
MATDSCMT6.1	Theory	3	Numerical Analysis	60	40
MATDSCMP6.1	Practical	2	Theory based Practical's on Numerical Analysis	25	25

Abbreviation for MATDSCMT5.1 / MATDSCMP 5.1: MAT – Mathematics; DSC – Discipline Core; M – Minor; T – Theory /P – Practical; 5 – Fifth Semester; .1 – Course 1

**Credit Distribution for B.Sc., (Basic/Honors) with Mathematics as Major in the 3<sup>rd</sup> Year (For Model IIA)**

Subject	Semester	Major/ Minor in the 3 <sup>rd</sup> Year	Credits					Total Credi ts
			Disciplin eSpecific Core (DSC)	Open Electiv e(OE)	Discipline Specific Elective (DSE)	AECC & Languag es	Skill Enhanceme ntCourses (SEC)	
Mathematics	I - IV	Major	4 Courses (4+2)x 4=24	4 Courses 3 x 4 = 12	---	(4+4=8) Courses 8x(3+1)=32	2 Courses 2x(1+1)= 4	72
Other Subject		Minor	24	--	--	--	--	24
								96
Mathematics	V & VI	Major	4 Courses 4x(3+2)=20	----	2 Courses 2 x 3 = 06	---	2 Courses 2 x 2 = 4	30
Other Subject		Minor	10	--	--	--	--	10
								(96+40)=136
Mathematics	VII & VIII	Major	2 Courses 2x(3+2)=10 3 Courses 3 x 4 = 12 1 Course 1 x 3 = 3 Total=25	----	2 Courses 2 x 3 = 6 Res.Meth 1 x 3 = 3 2 Courses 2 x 3 = 6 Total= 15	----	----	40
Total No. of Courses			14	04	07	08	04	136+40=176

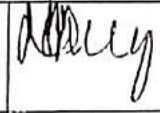



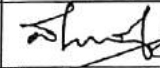


# BENGALURU NORTH UNIVERSITY

SRI DEVRAJ URS EXTENSION, TAMAKA, KOLAR-563 103

## BOARD OF STUDIES IN POLITICAL SCIENCE (UG):

Proceedings of the Meeting held on 16<sup>th</sup> October, 2021 at Government College for Boys, Kolar-563 101 under the Chairmanship of Dr. M. Narasimha Murthy, Professor, Department of Political Science, Bangalore University, Bangalore-560 056.

### MEMBERS PRESENT / ABSENT:

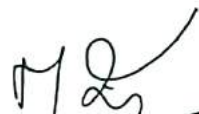
1.	DR. M. NARASIMHA MURTHY. Professor, Department of Political Science, Bangalore University, Jnana Bharathi, Bengaluru-560 056.	Chairman	
2.	DR. JAYARAMA REDDY. Govt. First Grade College, Hoskote,	Member	ABSENT
3.	SRI. CHANDRASEKHAR. K. Govt. First Grade College for Women, Chintamani.	Member	
4.	DR. R SHANKARAPPA. Asst Professor , Government First Grade College Kolar	Member	ABSENT
5. Dr.	PROF. ANANTHA MURTHY. R. Govt. First Grade College, Malur-563130	Member	
6.	DR. S. AMEER PASHA. Govt. First Grade College, Devanahalli	Member	
7.	PROF. M.N.MURTHY. GFGC, for Boys, Kolar-563 101.	Member	
8. Dr	M.N. SURESH. KUMAR GFGC, Doddaballapura.	Member	
9.	DR. SARASWATHI ASSISTANT PROFESSOR, GFGC, K.R.PURAM.	Member	


### PROCEEDINGS:

The Chairman welcomed the Members of the BOS and himself being a member of the State curriculum frame work committee. The Chairman explained the salient features of the NEP and the framework under which the new syllabus needs to be framed.

### RESOLUTIONS:

1. The Members discussed in detail about the new syllabus to be introduced for the Political Science students of I and II <sup>Semester</sup> year Degree Courses from 2021-22 onwards as per the guidelines and recommendations of the State Level Curriculum committee for Political Science.
2. The Members also discussed about the syllabus for Political Science as a Major / Minor subject (DSC-Discipline core) and Discipline elective and framed the syllabus for the same. the details of which are as follows.

  
**PRINCIPAL**  
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Bagepalli, Chikkaballapur Dist.

**CHAIRMAN**  
  
DR. M. NARASIMHA MURTHY  
ಡಾ. ಎಂ. ನರಸಿಂಹಮೂರ್ತಿ  
ಪ್ರಾಚಾರ್ಯರು  
ಕಾರ್ಯದರ್ಶಿ ಮತ್ತು  
ಬೆಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ  
ಬೆಂಗಳೂರು

## Composition of Subject Expert Committee Members

SN	Name & Organization	Designation
1	Dr. B.P. Veerabhadrappe Vice-Chancellor, Kuvempu University, Shankaraghatta	Chairman
2	Dr. B. K. Tulasimala Vice-Chancellor, KSAW University, Vijayapura	Member
3	Dr. D.V. Gopalappa Professor, University of Mysore, Mysuru	Member
4	Dr. S.T. Bagalkoti Professor, Karnatak University, Dharwad	Member
5	Dr. S. R. Keshava Professor, Bangalore University, Bengaluru.	Member
6	Dr. Viswanatha Professor, Mangalore University, Konaje	Member
7	Dr. Dasharath Naik Professor, Gulbarga University, Kalaburgi.	Member
8	Dr. Jayasheela Professor, Tumkur University, Tumakuru.	Member
9	Dr. D.N. Patil Professor, Rani Channamma University, Belagavi	Member
10	Dr. Basavaraja S. Benni Professor, VSK University, Ballari	Member
11	Dr. Rangappa K.B. Professor, Davanagere University, Davanagere	Member
12	Dr. D. Kumuda Professor, Bengaluru North University, Kolar	Member
13	Dr. N.T. Somashekhar Rtd.Assoc. Professor, Maharani College, Mysuru	Member
14	Dr. Hanumantharaya Y.S. Rtd.Assoc. Professor, GFGC, Midigeshi, Madhugiri Tq.	Member
15	Dr. Timmaraddi Assoc. Professor, A. S. Women's College, Ballari	Member

  
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SN	Name & Organization	Designation
16	Dr. K.B. Dhanajaya Principal, Sahyadri Arts College, Shivamogga.	Member
17	Dr. Joy Nerella Principal, Union Christian College, Sira Gate, Tumakuru	Member
18	Dr. Prasanna Pandhari GFGC, Rajnagar, Hubballi	Member
19	Dr. Tejaswini B. Yakkundimath Special Officer, Karnataka State Higher Education Council, Bengaluru	Member Convener


Special Invitees	
1	Dr. G. L. Parvathamma, Professor, Bangalore University.
2	Dr. H. R. Uma, Professor, Mysore University
3	Dr. Mahesh, Professor, Mysore University.
4	Dr. Premkumar, Professor, Mysore University.
5	Dr. Navitha Thimmayya, Professor, Mysore University.
6	Dr. H.H Baradi, Professor, Karnataka University, Dharwad
7	Dr. Vilas M Kadrolkar, Professor, Tumkur University, Tumkur
8	Dr. R. R. Biradar, Professor, Karnataka University, Dharwad
9	Dr. Basavaraj Nagoor, Professor, Karnataka University, Dharwad
10	Dr. Medhavini S Katti, Vijayanagara Sri Krishnadevaraya University, Bellary
11	Dr. D.M Madari, Director, KSAW University Regional Centre, Bidar
12	Dr. R. V. Gangshetty, Professor, KSAW University, Vijayapura
13	Dr. Yogesh S. N, Professor, Kuvempu University.
14	Dr. Manoj Dollu, Professor, Vijayanagara Sri Krishnadevaraya University.
15	Dr. Basappa Kamble, Professor, SSMS Arts, Science and Commerce College, Athani
16	Dr. Shanmukh K. Professor, SBC First grade college for Women, Davangere
17	Dr. B. M. Nasir Khan, Assoc. Professor, Sir MV Govt. Arts & Commerce College, Bhadravati.
18	Dr. Suchitra S., Assoc. Professor, Davangere University.
19	Dr. Bipin Soni, Dr. B.R Ambedkar School of Economics, Bengaluru

  
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### Proposed Structure for Political Science Discipline

Semester I				
Course	Paper	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment
Discipline Core-1	Basic Concepts in Political Science	3	3	100 (70+30)
Discipline Core--2	Political Theory	3	3	100 (70+30)
Open Elective-1	Human Rights	3	3	100 (70+30)
Semester II				
Discipline Core -3	Western Political Thought	3	3	100 (70+30)
Discipline Core -4	Indian National Movement and Constitutional Development	3	3	100 (70+30)
Open Elective—2	Indian Polity: Issues and Concerns	3	3	100 (70+30)
SEC	Skill Enhancement courses			

  
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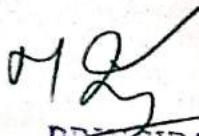
## Curriculum Structure for the Undergraduate Degree Program

### Program Articulation Matrix:

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be listed separately

Sem ester	Title / Name of the course	Program outcomes that the course addresses (not more than 3 per course)	Pre-requisite course(s)	Pedagogy#	Assessment\$
1	DSC-1: Analytical, Physical, Inorganic and Organic Chemistry-I Credits-4	<ul style="list-style-type: none"> <li>The concepts of chemical analysis, accuracy, precision and statistical data treatment</li> <li>Understand the preparation of alkanes, alkenes and alkynes, their reactions, etc.</li> <li>The Bohr's theory of atomic structure and how it was developed</li> <li>Quantum numbers and their necessity in explaining the atomic structure</li> </ul>	P.U.C /12 <sup>th</sup> standard/ or equivalent with Chemistry (With Maths in 10+2 Level)	Assignment Desk work	Internal Exams, Continuous Evaluation, Sem Exams
	DSClab-1: Analytical and Organic Chemistry Practicals-I  Credits-2	<ul style="list-style-type: none"> <li>The students will be able to learn how to handle the glassware, prepare and dilute solutions and perform the experiments with prepared reagents</li> <li>The students will be able to determine the analyte through volumetric and gravimetric analysis and understand the chemistry involved in each method of analysis.</li> <li>The students will be able to deduce the conversion factor based on stoichiometry and in turn use this value for calculation</li> </ul>		Assignment Desk work	Internal Exams, Continuous Evaluation, Sem Exams
2	DSC-2: Analytical, Physical, Inorganic and Organic Chemistry-II Credits-4	<ul style="list-style-type: none"> <li>Know the concept of volumetric and gravimetric analysis</li> <li>And handle toxic chemicals, concentrated acids and organic solvents and practice safety procedures.</li> <li>The concept of unit cell, symmetry elements, Nernst distribution law.</li> <li>Understand the preparation of</li> </ul>	-	Assignment Desk work	Internal Exams, Continuous Evaluation, Sem Exams

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		alkenes and alkynes, their reactions, and the mechanism of nucleophilic, electrophilic reactions.			
	DSC Lab -2: Inorganic and Physical Chemistry Practicals-II Credits-2	<ul style="list-style-type: none"> <li>To prepare standard solutions</li> <li>Techniques like precipitation, filtration, drying and ignition</li> <li>Various titrimetric techniques and gravimetric methods.</li> </ul>		Assignment Desk work	Internal Exams, Continuous Evaluation, Sem Exams
3	DSC-3: Credits-4  DSC Lab-3 Credits-2		DSC-1 and DSC-2	Assignment Desk work	Internal Exams, Continuous Evaluation, Sem Exams
4	DSC-4: Credits-4  DSC Lab-4: Credits-2			Assignment Desk work	Internal Exams, Continuous Evaluation, Sem Exams
5.	DSC-5: Credits-3 DSC Lab-5: Credits-2 DSC-6: Credits-3 DSC Lab-6: Credits-2 DSE-A1: Credits-3	:	DSC-3 and DSC-4	MOOC, Problem solving	Internal tests, Assignments, Quiz
6.	DSC-7: Credits-3 DSC Lab-7: Credits-2. DSC-8: Credits-3 DSC Lab-8: Credits-2 DSE-A2: Credits-3			MOOC, Problem solving	Internal tests, Assignments, Quiz
7.	DSC-9: Credits-3 DSC Lab-9: Credits=2 DSC-10: Credits-3 DSC Lab-10 : Credits -2 DSC-11: Credits=4 DSE-A3: Credits-3 And Research methodology Or DSE. Credits-3		DSC-5 and DSC-6 DSE-A1:  DSC-7 and DSC-8 DSE-A2:	MOOC, Problem solving	Internal tests, Assignments, Seminar, Debate, Quiz
8.	DSC-12:			Project	Internal tests,

Members of the B.M. (U.S.) Physics

Sl. No.	Name & Address	Chairman/Member	Signature
1	Dr. B. Sankar Professor Department of Physics Bangalore University Bangalore-560076	Chairman	
2	Dr. Subrahmanya P. S. Associate Professor Dept. of Physics Government College for women, Kolar	Member	
3	Dr. Indira Chinnai Mahesh Associate Professor Department of Physics National First Grade College Bijayalli	Member	
4	Dr. Seemappa L. Assistant Professor Department of Physics Government First Grade College Mudgal	Member	<del>ABSENT</del>
5	Dr. Krishna M. C. Assistant Professor Department of Physics Government College for women, Kolar	Member	
6	Dr. Adinath Venkatesh Assistant Professor Department of Physics (U.C.P.C. & Research Centre) Government First Grade College - Indole - 562014	Member	
7	Dr. Wanjamma H. C. Associate Professor Department of Physics Government First Grade College, Devanahalli, Bangalore Rural district-562011	Member	

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 THE NATIONAL SERVICE COUNCIL  
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Program Name	BSc in Physics	Semester	V
Course Title	Classical Mechanics and Quantum Mechanics- I (Theory)		
Course Code	PHY DSCT-5	No. of Credits	04
Contact Hours	60 Hours	Duration of SEA/Exam	2 ½ Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Pre-requisite(s): As per BNU Regulations

Course Outcomes (COs): After the successful completion of the course, the student will be able to

- Familiar with concepts Lagrangian Formulation of Classical Mechanics
- Identify the failure of classical physics at the microscopic level.
- Find the relationship between the normalization of a wave function and the ability to correctly calculate expectation values or probability densities.
- Explain the minimum uncertainty of measuring both observables on any quantum state.
- Describe the time-dependent and time-independent Schrödinger equation for simple potentials like for instance one-dimensional potential well and Harmonic oscillator.
- Apply Hermitian operators, their eigenvalues and eigenvectors to find various commutation and uncertainty relations.

Contents	60 Hrs
<p><b>Unit1: Introduction to Newtonian Mechanics:</b> Mechanics of system of particle, Conservation of linear momentum, Angular momentum and total energy in terms of system of particles.</p> <p><b>Lagrangian formulation:</b> Constraints, Holonomic constraints, non-holonomic constraints, Scleronomic and Rheonomic constraints. Generalized coordinates, degrees of freedom, Principle of virtual work, D'Alembert's principle, Lagrange equations. Newton's equation of motion from Lagrange equations, Applications: simple pendulum, Atwood's machine and linear harmonic oscillator.</p> <p style="text-align: right;"><b>12 Hours</b></p> <p><b>Activities:</b> <span style="float: right;"><b>03 Hours</b></span></p>	15
<p><b>Unit2: Relativity:</b> Inertial and Non-Inertial Frames: Fictitious forces. Uniformly rotating frame. Special Theory of Relativity: Michelson-Morley Experiment and its outcome. Postulates of Special Theory of Relativity. Lorentz Transformations. Simultaneity and order of events. Lorentz Contraction. Time dilation. Relativistic transformation of velocity, frequency and wave number. Relativistic addition of velocities. Variation of mass with velocity. Massless Particles. Mass energy Equivalence. Relativistic Kinematics. Transformation of Energy and Momentum.</p> <p><b>12 Hours</b></p> <p><b>Activities:</b> <span style="float: right;"><b>03 Hours</b></span></p>	15
<p><b>Unit3: Introduction to Quantum Mechanics</b></p> <p>Brief discussion on limitations of classical physics to explain black body radiation, Photoelectric effect, Compton effect, stability of atoms and spectra of atoms.</p> <p>Compton scattering: Expression for Compton shift (With derivation).</p> <p>Matter waves: de Broglie hypothesis of matter waves, Electron microscope, Wave description of particles by wave packets, Group and Phase velocities and relation between them, Experimental evidence for matter waves: Davisson- Germer experiment, G.P Thomson's experiment and its significance.</p> <p>Heisenberg uncertainty principle: Elementary proof of Heisenberg's relation between</p>	15

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### Agenda and Resolution:

1. The Board made the necessary modification and approved the New Syllabus, Marks Structure and Question paper pattern for 5<sup>th</sup> and 6<sup>th</sup> Semester.
2. The Board approved the SEC paper titled "*Public Health Consultancy*" for 5<sup>th</sup> semester Sociology students as mandatory, and the non-sociology students can also opt the above paper as SEC in 5<sup>th</sup> semester. The paper should be taught by Sociology Faculty only.
3. The New Syllabus for the following papers were approved.

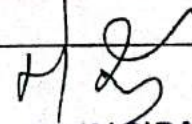
NEP SYLLABUS for Sociology (UG)						
SEM	PAPER	TITLE OF PAPERS	Credits Assigned	Hours/ Semester	Teaching Hours per week	
					Theory	Practical
V	DSC-9	Sociology of Entrepreneurship	4	60	4	-
	DSC-10	Society and Tribes	4	60	4	-
	DSC-11	Statistics for Sociological Research	4	60	4	-
	SEC	Public Health Consultancy	3	30	3	-
VI	DSC-12	Sociological Perspectives	4	60	4	-
	DSC-13	Sociology of Health	4	60	4	-
	DSC-14	Society in Karnataka	4	60	4	-
	INTERNSHIP/ DISSERTATION		2			2

### 4. ASSESSMENT:

Weightage for Assessments (In Percentage)

Type of Course	Formative Assessment/ Internal Assessment (IA)	Summative Assessment (Theory)	Total Marks
Theory	40	60	100

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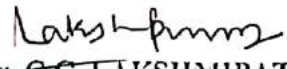
SEM	Paper	Title of papers	Credits
I	DSC -1	Understanding Sociology	3
	DSC -2	Changing Social Institutions in India	3
	OE-1	a) Indian Society: Continuity and Change b) Sociology of Everyday Life	3
II	DSC -3	Foundations of Sociological Theory	3
	DSC -4	Sociology of Rural Life in India	3
	OE-2	a) Society through Gender Lens b) Social Development in India	3
III	DSC -5	Social Stratification and Mobility	3
	DSC -6	Sociology of Urban Life in India	3
	OE-3	a) Sociology of Tourism Management b) Sociology of Youth	3
IV	DSC -7	Sociology of Marginalized Groups	3
	DSC -8	Population and Society	3
	OE-4	a) Sociology of Food Culture b) Sociology of Leisure	3
V	DSC - 9	Social Entrepreneurship	4
	DSC -10	Society and Tribes	4
	DSC -11	Statistics for Sociological Research	4
	SEC - 4	Public Health Consultancy	3
VI	DSC - 12	Sociological Perspectives	4
	DSC - 13	Sociology of Health	4
	DSC- 14	Society in Karnataka	4
		Internship /Dissertation	2

DSC: Discipline Specific Core

OE: Open Elective

SEC: Skill Enhancement Course

  
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 Dr. C.G. LAKSHMIPATHI  
 Prof. Dr. Lakshmi C.G.  
 Chairperson -  
 BOS-UG-Sociology  
 Bangalore North University, Kolar

## MODEL CURRICULUM

Curriculum Structure for the Undergraduate Degree

Program BA Total Credits for the Program: 24/26    Starting year of  
implementation: 2023 Name of the Degree Program: B.A

Discipline/Subject: Sociology

**Title of the Course: (B A - 5th and 6th Semesters)**

Course: DSC SOC C9 - Social Entrepreneurship		Course: DSC SOC C10- Society and Tribes	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
4	60	4	60

Course: DSC SOC C11 - Statistics in Sociological Research		Course: DSC SOC C12 - Sociological Perspectives	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
4	60	4	60

Course: DSC SOC C13 - Sociology of Health		Course: DSC SOC C14 - Society in Karnataka	
Number of Theory Credits	Number of lecture hours/semester	Number of Theory Credits	Number of lecture hours/semester
4	60	4	60

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### Program Articulation Matrix:

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be listed separately

### Objectives of Courses:

Sem		Title /Name of the Course	Program outcomes that the course addresses (not more than 3 per course)	Pre-requisite course (s)	Pedagogy#	Assessment\$
5	DSC - SOC C9	Social Entrepreneurship	<ol style="list-style-type: none"><li>1. To provide knowledge about social entrepreneurship</li><li>2. To help to develop social entrepreneurship imagination</li><li>3. To help them to start their own social enterprise or not for profit startup as well as act innovative in the already working organisation</li></ol>	B A 2nd year Courses	Experiential learning (activity-based learning)	Oral or written presentations to assess analysing capability, creativity and communication skills

  
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5	DSC - SOC C10	Society and Tribes	1. To provide basic knowledge about social organisation among tribals 2. Critically understand the implications of changes occurring 3. Undertake micro research work and communicate effectively	B A 2nd year Courses	Micro projects Activity based learning	Presentation of micro projects Questions asked and answered
5	DSC - SOC C11	Statistics in Sociological Research	1. General introduction to statistical techniques for analysing social science data  2. To compute these basic statistics as appropriate for the data at hand 3. Learn techniques for summarizing data, examining relationships among variables, generalizing from samples to populations, and testing statistical hypotheses	B A 2nd year Courses	Experiential learning (activity-based learning)	Oral or written presentations to assess problem solving capability
6	DSC - SOC C12	Sociological Perspectives	1. To introduce major Sociological theoretical approaches 2. To introduce	B A 2nd year Courses	Lectures and Discussions	Oral or written presentations to assess analysing capability, creativity and

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		and use fundamental categories of theory 3. Compare and contrast the ways different theorists use the same or similar concepts to build or present their ideas		communicatio n skills
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6	DSC - SOC C13	Sociology of Health	1. Understand the concept of health, illness and social conditions 2. Analyse the relationship between social factors and health status 3. Understand the role of medical doctors, paramedics, pharmaceutical industry and social institutions in maintaining and promoting health	B A 2nd year Courses	Lectures and Discussions	Oral or written presentations to assess analysing capability, creativity and communicatio n skills
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6	DSC - SOC C14	Society in Karnataka	<p>1. Enhance Sociological knowledge about the Local and Regional context of Karnataka</p> <p>2. Acquaint students with the changing trends in Karnataka with special reference to Development processes and politics</p> <p>3. Learn about the unique cultures in Karnataka</p>	B A 2nd year Courses	Lectures and Discussions	Oral or written presentations to assess analysing capability, creativity and communication skills
---	------------------------	-------------------------	--	----------------------------	--------------------------------	---

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## Pedagogy for student engagement is predominantly lectures. However, other pedagogies enhancing better student engagement to be recommended for each course. The list includes active learning/ course projects/problem or project based learning/ case studies/self study like seminar, term paper or MOOC

\$ Every course needs to include assessment for higher order thinking skills (Applying/ Analyzing/ Evaluating/ Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for learning).

  
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**BENGALURU NORTH UNIVERSITY**  
**DEPARTMENT OF COMMERCE B.COM DEGREE**  
**(CBCS -SEMESTER SCHEME) – 2021-22**  
**COURSE MATRIX**  
**FIRST SEMESTER**


Semester I								
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hrs per Week (L+T+P)	SE E	CIE	Total Marks	Credit
1	Lang.1.1	Language-I	AECC	3+1+0	60	40	100	3
2	Lang.1.2	Language-II	AECC	3+1+0	60	40	100	3
3	B.Com.1.1	Financial Accounting	DSC	4+0+0	60	40	100	4
4	B.Com.1.2	Management Principles and Applications	DSC	4+0+0	60	40	100	4
5	B.Com.1.3	Principles of Marketing	DSC	4+0+0	60	40	100	4
6	B.Com.1.4	Digital Fluency	SEC-SB	1+0+2	50	50	100	2
7	B.Com.1.5	Physical Education - Yoga	SEC-VB	0+0+2	-	25	25	1
8	B.Com.1.6	Health & Wellness	SEC-VB	0+0+2	-	25	25	1
9	B.Com.1.7	<b><i>Any one of the following</i></b> a. Accounting for everyone b. Financial Literacy c. Entrepreneurship & Start-ups (Refer Annexure)	OEC	3+0+0	50	50	100	3
<b>Sub-Total(A)</b>					<b>400</b>	<b>350</b>	<b>750</b>	<b>25</b>

  
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**SECOND SEMESTER**

**Semester II**

Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hrs per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Lang.2.1	Language-I	AECC	3+1+0	60	40	100	3
2	Lang.2.2	Language-II	AECC	3+1+0	60	40	100	3
3	B.Com.2.1	Advanced Financial Accounting	DSC	4+0+0	60	40	100	4
4	B.Com.2.2	Corporate Administration or Business Mathematics	DSC	4+0+0	60	40	100	4
5	B.Com.2.3	Law & Practice of Banking	DSC	3+1+0	60	40	100	4
6	B.Com.2.4	Environmental Studies	AECC	2+0+0	50	50	100	2
8	B.Com.2.5	Sports	SEC - VB	0+0+2		25	25	1
9	B.Com.2.6	NCC/NSS/R&R(S&G)/Cultural	SEC-VB	0+0+2		25	25	1
7	B.Com 2.7	<b>Any one of the following</b> a. Financial Environment b. Investing in Stock Markets c. Event Management (Refer Annexure)	OEC	3+0+0	50	50	100	3
<b>Sub-Total(B)</b>					<b>400</b>	<b>350</b>	<b>750</b>	<b>25</b>



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**THIRD SEMESTER**

**Semester III**

Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hrs per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Lang.3.1	Language-I	AECC	3+1+0	60	40	100	3
2	Lang.3.2	Language-II	AECC	3+1+0	60	40	100	3
3	B.Com.3.1	Corporate Accounting	DSC	4+0+0	60	40	100	4
4	B.Com.3.2	Business Statistics	DSC	4+0+0	60	40	100	4
5	B.Com.3.3	Cost Accounting	DSC	4+0+0	60	40	100	4
6	B.Com.3.4	India & Indian Constitution	AECC	3+0+0	30	20	50	3
7	B.Com.3.5	Sports/NCC/NSS/R&R (S&G)/Cultural	SEC – VB	0+0+2	-	50	50	2
8	B.Com 3.6	<u>Any one of the following</u> a. Business Ethics b. Corporate Environment (Refer Annexure)	OEC	3+0+0	60	40	100	3
<b>Sub-Total(B)</b>					<b>390</b>	<b>310</b>	<b>700</b>	<b>26</b>



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## FOURTH SEMESTER

### Semester IV

Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hrs per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Lang.4.1	Language-I	AECC	3+1+0	60	40	100	3
2	Lang.4.2	Language-II	AECC	3+1+0	60	40	100	3
3	B.Com.4.1	Advanced Corporate Accounting	DSC	4+0+0	60	40	100	4
4	B.Com.4.2	Costing Methods & Techniques	DSC	4+0+0	60	40	100	4
5	B.Com.4.3	Business Regulatory Framework	DSC	4+0+0	60	40	100	4
6	B.Com.4.4	Financial Education & Investment Awareness Or Artificial Intelligence	SEC-SB	1+0+2	30	20	50	2
7	B.Com.4.5	Sports/NCC/NSS/R&R (S&G)/Cultural	SEC-VB	0+0+2	-	50	50	2
8	B.Com.4.6	<u>Any one of the following</u> a. Income Tax for beginners b. Advertising & Personal Selling (Refer Annexure)	OEC	3+0+0	60	40	100	3
<b>Sub-Total(B)</b>					<b>390</b>	<b>310</b>	<b>700</b>	<b>25</b>

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Subjects	Paper	Instruction hrs/week	Duration of Exam(hrs)	Marks			Credits
				IA	Exam	Total	
Entrepreneurship Development	5.1	4	3	30	70	100	3
International Business	5.2	4	3	30	70	100	3
Income Tax - I	5.3	4	3	30	70	100	3
Cost Management	5.4	4	3	30	70	100	3
Elective - I	5.5	4	3	30	70	100	3
Elective - II	5.6	4	3	30	70	100	3
SDC		3	3	30	70	100	2
<b>Total Credits</b>							<b>20</b>

VI SEMESTER							
Subjects	Paper	Instruction hrs/week	Duration of Exam(hrs)	Marks			Credits
				IA	Exam	Total	
Business Regulations	6.1	4	3	30	70	100	3
Principles and Practice of Auditing	6.2	4	3	30	70	100	3
Income Tax - II	6.3	4	3	30	70	100	3
Management Accounting	6.4	4	3	30	70	100	3
Elective - I	6.5	4	3	30	70	100	3
Elective - II	6.6	4	3	30	70	100	2
SDC		3	3	30	70	100	2
<b>Total Credits</b>							<b>20</b>

**ELECTIVE GROUPS**

**1. ACCOUNTING & TAXATION GROUP**

Semester No.	Paper No.	Title of the Paper
V	AC. 5.5	Advanced Accounting
	AC.5.6	Business Taxation - I
VI	AC.6.5	Business Taxation - II
	AC.6.6	Accounting for Business Decisions and IFRS

**2. FINANCE GROUP**

Semester No.	Paper No.	Title of the Paper
V	FN.5.5	Advanced Financial Management
	FN.5.6	International Finance
VI	FN.6.5	Corporate Financial Policy
	FN.6.6	Security Analysis & Portfolio Management

  
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## Curriculum Structure

Program: B.C.A

Subject: Computer Science

### Curriculum for BCA

Semester	Course No.	Theory/ Practical	Credits	Paper Title	Marks	
					S.A.	I.A.
V	DSC13	Theory	4	Design & Analysis of Algorithms	60	40
	DSC13-Lab	Practical	2	Design & Analysis of Algorithms Lab	25	25
	DSC14	Theory	4	Statistical Computing and R Programming	60	40
	DSC14-Lab	Practical	2	R Programming Lab	25	25
	DSC15	Theory	4	Software Engineering	60	40
	DSE-E1	Theory	3	A. Cloud Computing B. Business Intelligence	60	40
	Voc-1	Theory	3	Digital Marketing	60	40
SEC-4	Theory/Practical	2	Cyber Security	30	20	
VI	DSC16	Theory	4	Artificial Intelligence and Applications	60	40
	DSC17	Theory	4	PHP and MySQL	60	40
	DSC17-Lab	Practical	2	PHP and MySQL Lab	25	25
		Project	6	Project Work		
	DSE-E2	Theory	3	A. Fundamentals of Data Science B. Mobile Application Development	60	40
	Voc-2	Theory	3	Web Content Management System	60	40
	SEC-5	Theory/Practical	2	Logical Reasoning	30	20



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**Curriculum Design/Syllabus Framing Committee**  
**Proceeding of BOS Meeting in Computer Science and BCA**

The meeting of BOS in Computer Science and BCA was held at Government First Grade College ,KR Puram, Bengaluru-36 On 17.08.2023 and 18.08.2023 at 11.00 am.

The chairman welcomed all the members and requested them to discuss the agenda.

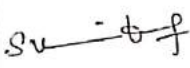


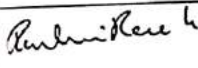
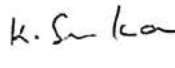

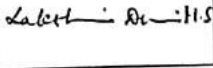
**Agenda :**

Finalizing and approving the B.Sc Computer Science and BCA syllabus (DSC, Elective, Vocational and SEC) for V and VI semester to introduced at Undergraduate course for the academic year 2023-24.

**Decision:**

The BOS Members discussed in detail regarding Computer Science and BCA subject and approved the same V and VI semester syllabus for the academic year 2023-24.

The following BOS members were present

Sl. No	Name	Designation	Signature
1.	Mr. S.Manikandan Assistant Professor, Dept of Computer Science, Government First Grade College, KR Puram, Bengaluru .	Chairperson	
2.	Dr. Murugan K Assistant Professor, Dept of Computer Science, Government First Grade College, KR Puram, Bengaluru .	Member	
3.	Dr. Hamela K Assistant Professor, Dept of Computer Science, Government First Grade College , Malur.	Member	
4.	Rashmi Rao K Associate Professor, Dept. of Computer Science, Government First Grade College, Hoskote.	Member	
5.	Mr. Sankar Assistant Professor, Dept of Computer Science, LBS Government First Grade College, RT Nagar, Bengaluru	Member	
6.	Dr. Rajendrakumar Assistant Professor, Dept of Computer Science, Govt. College for Women, Kolar.	Member	
7.	Mrs. Lakshmi Devi M S Assistant Professor, Dept of Computer Science, Government First Grade College, Varthur, Bengaluru.	Member	

The meeting was concluded with vote of thanks by chairman.



S.Manikandan  
Chairperson  
BOS-UG Computer Science & BCA(NEP)  
Bengaluru North University, Kolar.

## Model Curriculum for BCA

Sem	Core Courses	Hour / Week		DS Elective Courses	Hous/ Week
		Theory	Lab		
1	i. Fundamentals of Computers ii. Programming in C iii. Mathematical Foundation/ Accountancy iv. LAB: Information Technology v. LAB: C Programming	3 3 3	4 4		
2	i. Discrete Mathematical Structures ii. Data Structures using C iii. Object Oriented Concepts using JAVA iv. LAB: Data Structure v. LAB: JAVA Lab	3 3 3	4 4		
3	i. Data Base Management Systems ii. C# and DOT NET Framework iii. Computer Communication and Networks iv. LAB: DBMS v. LAB: C# and DOT NET Framework	3 3 3	4 4		
4	i. Python Programming ii. Computer Multimedia and Animation iii. Operating Systems Concepts iv. LAB: Multimedia and Animation v. LAB: Python programming	3 3 3	4 4		
5	i. Internet Technologies ii. Statistical Computing and R Programming iii. Software Engineering iv. LAB: R Programming v. LAB: JAVA Script, HTML and CSS vi. Vocational 1	3 3 3	4 4	(a) Cyber Law and Cyber Security (b) Cloud Computing (c) Business Intelligence	3 3 3
6	i. Artificial Intelligence and Applications ii. PHP and MySQL iii. LAB: PHP and MySQL iv. PROJECT: v. Vocational 2	3 3 3	4 12	(a) Fundamentals of Data Science (b) Mobile Application Development (c) Embedded Systems	3 3 3
7	i. Analysis and Design of Algorithms ii. Data Mining and Knowledge Management iii. LAB: Algorithms iv. LAB: Data Mining and Knowledge Management v. Vocational 3	3 3	4 4	(a) Data Compression (b) IoT (c) Data Analytics	3 3 3
8	i. Automata Theory and Compiler Design ii. Cryptography and Network Security iii. Compiler Lab iv. LAB: Project v. Vocational 4	3 3 3	4 12	(a) Open-Source Programming (b) Storage Area Networks (c) Pattern Recognition (a) Machine Learning	3 3 3 3

**TABLE I: COURSE STRUCTURE FOR BCA.**

Semester	Course Code	Title of the Paper	Credit	Total Credit of OE, Languages, CAE, Voc, AECC, SEC	Total Credit
I	CAC01	Fundamentals of Computers	3	13	26
	CAC02	Programming in C	3		
	CAC03(a)/(b)	Mathematical Foundation/ Accountancy	3		
	CAC01P	LAB: Information Technology	2		
	CAC02P	LAB: C Programming	2		
II	CAC04	Data Structures using C	3	13	26
	CAC05	Object Oriented Concepts using JAVA	3		
	CAC06	Discrete Mathematical Structures	3		
	CAC04 P	LAB: Data Structure	2		
	CAC05 P	LAB: JAVA	2		
III	CAC07	Data Base Management Systems	3	13	26
	CAC08	C# and DOT NET Framework	3		
	CAC09	Computer Communication and Networks	3		
	CAC07P	LAB: DBMS	2		
	CAC08P	LAB: C# and DOT NET Framework	2		
IV	CAC10	Python Programming	3	13	26
	CAC11	Computer Multimedia and Animation	3		
	CAC12	Operating System Concepts	3		
	CAC10P	LAB: Python programming	2		
	CAC11P	LAB: Multimedia and Animation	2		
V	CAC13	Internet Technologies	3	10	23
	CAC14	Statistical Computing and R Programming	3		
	CAC15	Software Engineering	3		
	CAC13P	LAB: JAVA Script, HTML and CSS	2		
	CAC14P	LAB: R Programming	2		
VI	CAC16	PHP and MySQL	3	10	23
	CAC17	Artificial Intelligence and Applications	3		
	CAC16P	LAB: PHP and MySQL	2		
	CA-P1	Project Work	5		
VII	CAC18	Analysis and Design of Algorithms	3	11	21
	CAC19	Data Mining and Knowledge Management	3		
	CAC18P	LAB: Algorithms	2		
	CAC19P	LAB: Data Mining	2		
	CAI01	Internship	2		
VIII	CAC20	Automata Theory and Compiler Design	3	6	20
	CAC21	Cryptography and Network Security	3		
	CAC20P	LAB: Compiler Lab	2		
	CAP02	Project Work	6		


**TABLE II: CS COURSE DETAILS FOR BCA**

Course-Type	Course Code as referred above	Compulsory/ Elective	List of compulsory courses and list of option of elective courses. (A suggestive list)
CA	CAC01, CAC02, CAC03(a)/(b), CAC04, CAC05, CAC06, CAC07, CAC08, CAC09, CAC10, CAC11, CAC12, CAC13, CAC14, CAC15, CAC16, CAC17, CAC18, CAC19, CAC20, CAC21	Compulsory	As Mentioned in Table I
CA E	CAE-1A	Elective	Cyber Law and Cyber Security OR Business Intelligence OR Fundamentals of Data Science
	CAE-2A	Elective	Fundamentals of Data Science OR Mobile Application Development OR Embedded Systems
	CAE-3A	Elective	Data Compression OR Internet of Things (IoT) OR Data Analytics
	CAE-4A	Elective	Open-source Programming OR Storage Area Networks OR Pattern Recognition OR Machine Learning
Vocational	Vocational -1	Elective	DTP, CAD and Multimedia OR Hardware and Server Maintenance OR Web Content Management Systems OR Computer Networking OR Health Care Technologies OR Digital Marketing OR Office Automation
	Vocational -2	Elective	
	Vocational -3	Elective	
	Vocational -4	Elective	
SEC	SEC 1	Compulsory	Health & Wellness/ Social & Emotional Learning
	SEC 2	Compulsory	Sports/NCC/NSS etc
	SEC 3	Compulsory	Ethics & Self Awareness
	SEC 4	Compulsory	Professional Communication
AECC	AECC1	Compulsory	Environmental Studies
	AECC2	Compulsory	Constitution of India
Language 1	L1-1, L1-2, L1-3, L1-4	Compulsory	Kannada/Functional Kannada
Language 2	L2-1, L2-2, L2-3, L4-4	Elective	English/Hindi/French/ Additional English/ etc.



## Proposed Structure for Political Science Discipline

Semester I				
Course	Paper	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment
Discipline Core-1	Basic Concepts in Political Science	3	3	100 (70+30)
Discipline Core--2	Political Theory	3	3	100 (70+30)
Open Elective-1	Human Rights	3	3	100 (70+30)
Semester II				
Discipline Core -3	Western Political Thought	3	3	100 (70+30)
Discipline Core -4	Indian National Movement and Constitutional Development	3	3	100 (70+30)
Open Elective—2	Indian Polity: Issues and Concerns	3	3	100 (70+30)
SEC	Skill Enhancement courses			

  
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**COURSE PATTERN, SCHEME OF EXAMINATION AND CREDITS  
BA/BA(hons) CREDIT BASED SEMETER SCHEME, 2014**

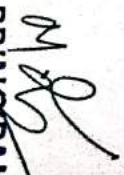
Subject HISTORY	Papers	Instru- tion Hours/ week	Dural ion of Exam (hrs)	MARKS			Credits
				IA	IXAM	TOTAL	
<b>I, II, III &amp; IV SEMESTERS</b>							
Paper 1	HISTORY OF INDIA-I	1 X 5	1X3	1 X 50	1X100	1x150	1x3
Paper 2	HISTORY OF INDIA -II	1 X 5	1X3	1 X 50	1X100	1x150	1x3
Paper 3	KARNATAKA - SOCIETY ECONOMY AND CULTURE	1 X 5	1X3	1 X 50	1X100	1x150	1x3
Paper 4	HISTORY AND TOURISM IN INDIA	1 X 5	1X3	1 X 50	1X100	1x150	1x3
<b>V SEMESTER</b>							
Paper 5.1	HISTORY OF MODERN INDIA	1x4	1x3	1x50	1x100	1x150	1x3
Paper 5.2 (A)	HISTORY OF EUROPE 1500 -1945 OR	1x4	1x3	1x50	1x100	1x150	1x3
Paper 5.2 (B)	HISTORY OF CHINA AND JAPAN SINCE 1900 AD						
<b>VI SEMESTER</b>							
Paper 6.1	INDIA AFTER INDEPENDENCE	1x4	1x3	1x50	1x100	1x150	1x3
Paper 6.2 (A)	CONTEMPORARY WORLD OR	1x4	1x3	1x50	1x100	1x150	1x3
Paper 6.2 (B)	HISTORY OF WEST ASIA SINCE 1900 A.D.						

  
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## Structure for History Discipline

Core Paper no.	Paper Title	Credit	No. of Teaching Hours/Week	Total Marks/Assessment
<b>V Semester</b>				
DSC-9	History of Western Civilization (6BC-1200 AD)	4	4	100(60+40)
DSC-10	Colonialism And Nationalism in Asia (1900 to1970)	4	4	100(60+40)
DSC-11	History of Europe from 1789 to 1945 AD	4	4	100(60+40)
BSC-12	Contemporary History of India From 1947-1990s	4	4	100(60+40)
DSE-1	A. History of Tourism in India B. Heritage Tourism in Karnataka	3	4	100(60+40)
VoC	Principles of Field Study Communicating Culture: Tellings, Representation and Leisure	3	4	100(60+40)
<b>VI Semester</b>				
DSC-13	History of Freedom Movement and Unification in Karnataka	4	4	100(60+40)
DSC-14	History of India. (CE 1761-CE 1857)	4	4	100(60+40)
DSC-15	History of United States of America -I (1776-1945)	4	4	100(60+40)
DSC-16	Process of Urbanization in India	4	4	100(60+40)
DSE-2	A. Dr. B.R. Ambedkars Social and Political Philosophy B. Heritage Sites in your own District	3	4	100(60+40)
VoC	A. Introduction to archives B. History of Indian Numismatics	3	4	100(60+40)

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**B.A/B.A(HONS) CREDIT BASED SEMESTER SCHEME SYLLABUS**  
**HISTORY w e f 2014-15**

Sl No	SEMESTERS	TITLE OF PAPER	Page No
1	<b>I SEMESTER</b> PAPER - I	HISTORY OF INDIA-I	1-2
	<b>II SEMESTER</b> PAPER - II	HISTORY OF INDIA -II	
3	<b>III SEMESTER</b> PAPER - III	KARNATAKA - SOCIETY ECONOMY AND CULTURE	5-6
	<b>IV SEMESTER</b> PAPER - IV	HISTORY AND TOURISM IN INDIA	
5	<b>V SEMESTER</b> PAPER - V	HISTORY OF MODERN INDIA	9-10
	<b>PAPER - V (A)</b>	HISTORY OF EUROPE 1500 -1945	
6	<b>V (B)</b>	OR HISTORY OF CHINA AND JAPAN: 1500 AD	12
	<b>VI SEMESTER</b> PAPER - VI	INDIA AFTER INDEPENDENCE	
7	<b>PAPER - VI (A)</b>	CONTEMPORARY WORLD	15-16
	<b>VI (B)</b>	OR HISTORY OF WEST ASIA SINCE 1900 A.D.	
8			17

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