

P. D. E. A's
Prof. Ramkrishna More Arts, Commerce and Science
College Akurdi Pune-411044

Affiliated to



Savitribai Phule Pune University [SPPU]



B.C.A(Under AICTE)

Choice Based Credit System-2024 Pattern
Under
Autonomy and NEP-2020

From Academic Year
2024-2025

Syllabus
First Year Graduate F.Y. B. C.A.(Under
AICTE)

Board of Studies B.C.A. (Under AICTE)

Preamble of the syllabus

B.C.A.(Science) program is designed to bridge the gap between IT industries and academic institutes by incorporating the latest development into the curriculum and to give students a complete understanding within a structured framework. This is intended to provide a broad framework within which help to create an academic base that responds to the need of the students to understand the basics of Computer. The curriculum framework is designed and formulated in order to acquire and maintain standards of achievement in terms of knowledge, understanding and skills in Computer Science and their applications, critical thinking and developing skills for

problem solving and initiating research which are competitive globally. This program is for candidates who wish to explore new emerging technologies using computer languages.

It will provide the necessary skills to make the successful candidate proficient in software development, paving the way for self-employment. The curriculum is oriented more towards Programming and Software. Ability to apply the algorithmic principles, mathematical foundations and computer science theory for designing computer-based systems..

Goals:

- The Department BCA(Science) degree is to give students the information and skills required for careers in the software business, as well as computer application. To provide high-quality computer education to enhance logical programming and computing skills.
- To prepare students for carriers in software industry understanding and skills related to the use of computers and its applications.

Rules and Regulations:

1. National Credit Framework (NCrF): For creditisation and integration of all higher education qualifications leading to a certificate/ diploma/ degree with multiple entry and exit options, college will refer to National Credit Framework (NCrF) which encompasses the qualification frameworks for higher education, vocational and skill education and school education, namely National Higher Education Qualification Framework (NHEQF), National Skills Qualification Framework (NSQF) and National School Education Qualification Framework (NSEQF) respectively.

2. Structure of Four years multidisciplinary UG Programme and Five Years Integrated Multidisciplinary Master's Degree Programmes with Multiple Entry and Exit Options at Different Levels:

- i. **Students will have the flexibility to enter four years multidisciplinary Under Graduate Programme** in odd semesters and exit a programme after the successful completion of even semesters as per their future career needs.
- ii. Students will get a Certificate after a One year programme (minimum 40 Credits), a Diploma after two years (minimum 80 Credits), a Bachelor's degree after three years (minimum 120 Credits), and a Bachelor's degree with Research or Honours after Four years (minimum 160 Credits).

(i) Qualification Type and Credit Requirements of Four Years Multidisciplinary Degree Programme with Multiple Entry and Exit Options Details of qualifications, minimum credit requirements, exit credit courses, year and semester are as under:

Level s	Qualification Title	Credit Requirement		Semester	Year
		Minimum	Maximum		
4.5	UG Certificate	40	44	2	1
5.0	UG Diploma	80	88	4	2
5.5	Three Year s Bachelor's degree	120	132	6	3
6.0	Bachelor's degree e Honour's with Major	160	176	8	4

	Bachelor's degree Honour's with Major	160	176	8	4
7.0	Master's Degree	200	220	10	5
8.0	Ph. D.	----	-----	-----	----

(ii) An exit 6-credit bridge course(s) lasting two months, including at least 6-credit job specific internship/apprenticeship that will help the graduates acquire job-ready competencies required to enter the workforce will be an additional requirement for the award of the undergraduate Certificate/ Diploma/ three year Bachelor's Degree.

(iii) On exit, the students will have the option to re-enter the programme in the college, or in a different higher education institution. Re-entry at various levels for lateral entrants in academic programmes should be based on the earned and valid credits as deposited and accumulated in the Academic Bank of Credits (ABC) through Registered Higher Education Institutions (RHEI) and proficiency test records.

(iv) Eligibility for admission to the fourth year of four-year Honours with Research Degree Programmes as per UGC guidelines: Minimum CGPA of 7.5 or minimum 75% at three- year degree.

(v) PG curriculum, as illustrated below, have flexibility

- a) One-year Post-Graduate Diploma (PGD), b) Two-year Post-graduate Programme and
- c) 5 Years Master's degree programmes with multiple Entry and Exit options at different levels.

(a) Post-Graduate Diploma (PGD): Programme duration- One year (2 semesters) after any bachelor's degree, min. 40 credits

(i) UGC: 1-Year (2 semesters) Post-Graduate Diploma (PGD) after 3-years Bachelor's degree: Level 6.0

(ii) UGC: 1-Year (2 semesters) PGD after 4 years Bachelor's degree (Honors/ Research): Level 6.5

(b) Master's Degree:

(c) UGC: 2-Years (four semesters) Master's Degree after obtaining a 3-years Bachelor's degree, Minimum 40 credits/year, second year devoted entirely to research, PG – 2nd year: Level 6.5 1-Year (two semesters) Master's Degree after obtaining a 4-year Bachelor's degree (Honours/Research): Minimum 40 credits: Level 6.5

(d) Level 8 represents Ph. D. Research Degree.

(e) A 5-year Integrated Bachelor's and Master's programme shall have a minimum of 220 credits.

(f) Master's and doctoral programmes, while providing rigorous research-based specialization, should also provide opportunities for multidisciplinary work, in academia, government, research institutions, and industry.

3. Lateral Entry/ Re-entry at higher Levels after exit from lower levels of four years multidisciplinary UG degree programme:

(i) The credit points earned and accumulated shall be used to determine the eligibility for taking admission to various programs at multiple levels, subject to fulfilment of the broad principles laid down under NCrF. Students who leave with a Certification, Diploma, or a Basic Bachelor's Degree will be eligible to re-enter the programme at the exit level to complete or progress to the next level through lateral entry mode. Depending upon the academic and physical facilities available, the State Universities/ Autonomous Colleges (Higher Education Institutions or HEI) may earmark specific seats/ intake for lateral entry into the second year/ third year/ fourth year of a four years multidisciplinary UG degree programme

as approved by Professional Standard Setting Bodies (PSSB/Govt. of Maharashtra/ statutory council of affiliating University plus any consequential vacancies caused by exits to an ongoing programme (four-year Degree Programme and Integrated Master's or second year Master's). Lateral entry or Re-entry is open to those students if he/she has either –

(a) successfully completed the first year/second year/third year of the particular four years multidisciplinary degree programme in any ABC registered HEI with valid credits in ABC and re-entering into the second year/third year/fourth year, respectively of the same four years degree programme of any ABC registered HEI, within stipulated/ permissible period of years as decided by Statutory Councils of that HEI

OR

(b) Already successfully completed a multidisciplinary four-year first- degree programme and is desirous of and academically capable of pursuing another multidisciplinary four years first-degree programme in an allied subject.

(ii) A student will be allowed to enter/re-enter only at the odd semester. Re-entry at various levels for lateral entrants in academic programmes should be based on the earned and valid credits as deposited and accumulated in Academic Bank of Credits (ABC) through Registered Higher Education Institutions (RHEI) and proficiency test records. However, in terms of the admission eligibility requirements, the student shall belong to the same faculty/ discipline in terms of Major Subject i.e., the Major subject of his earlier Programme and the Major subject of the new Programme for which he is seeking admission must be from the same faculty/discipline. Reservation for lateral entry will be executed as per the Government of Maharashtra norms.

4. Distribution of Credits across Multidisciplinary Four Years Degree Programme:

(i) Four-year multidisciplinary degree programme with Honours/ Specialization Degree will have Internship and Core /Major Courses with a minimum of 22 credits per sem. in the Fourth Year.

(ii) Four-year multidisciplinary degree programme with Research will have Research Projects, Seminars, Dissertations and Internships with a minimum of 22 credits per Sem. in the Fourth Year.

(iii) Students shall select a 'Major or Core Subject/ Discipline' and a 'Minor Subject/Discipline' from the lists of various Subject Combinations and Options provided the Colleges. In general, for the four years multidisciplinary bachelor's degree programme, the distribution of credits will be as follows:

(a) Disciplinary/interdisciplinary Major/ Core Subject (minimum of 68 credits)-
Mandatory and Elective Courses

(b) Disciplinary/interdisciplinary Minor Subject (maximum of 22 credits)

(c) Skill based/Vocational studies corresponding to the Major/ Core Subject (8 credits)

(d) Field projects/internship/apprenticeship/community engagement and service corresponding to the Major/ Core Subject (14-22 credits) with a maximum of six credits per Semester

(e) Generic/ Open Electives through Baskets of Elective Courses (12 credits),

(f) Ability Enhancement Courses including Languages, Literature and Environmental Studies (12 credits),

(g) In-built modules on the Indian Knowledge System (IKS) in Major/ Core Subject at Level 4.5 – 2 credits

(h) Value-based Education, Life Skills and Professional Ethics: Co- curricular Courses such as Sports and Culture, NSS/NCC and Fine/ Applied/Visual Arts (8 credits).

Student can earn some credits (SEC/VSC/GE/OE) in the form of online from-

(i) The National Skills Qualifications Framework (NSQF) organizes qualifications for Vocational and Skill Courses in a series of 8 levels based on professional knowledge, professional skills, core skills and responsibilities, in the increasing order of complexity and competency.

(ii) University Grants Commission (Credit Framework For Online Learning Courses through Study Webs of Active-Learning for Young Aspiring Minds) Regulations, 2021, permits up to 40 per cent of the total courses being offered in a particular programme in a semester through the Online Learning Courses offered through the Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) platform.

5. Examination and Assessment Process:

(i) The basic principle of the credit framework is that credits are a function of the successful completion of a program of study/ vocational education/ training and assessment. No credit can be earned by the student unless the student is assessed for the achievement of the desired competencies and outcome of a program.

(ii) Exit options are provided with certification, diploma and basic Bachelor's degrees to the students at the end of the second, fourth and sixth semesters of a four years multidisciplinary degree programme. Students will receive a Bachelor's degree with Honours/ Research on successfully completing of all eight semesters of the UG Program either at a stretch or with opted exits and re-entries.

(iii) For the smooth success of four-year multidisciplinary degree programme with multiple entry and exit systems, the examination mode will be based on the combination of innovative trends in formative (informal and formal tests administered during the learning process) and summative (evaluation of students learning at the end of an instructional unit) examination modes. This is in line with the UGC Report on 'Evaluation Reforms in Higher Educational Institutions (2019)'.

(iv) Evaluation of each students in each course will be done as follows

- a. Each theory or practical course will be of 2 credits = 50 mark
- b. Internal evaluation 30% weightage (15 mark)
- c. External evaluation 70% weightage (35 marks)
- d. Students should secure 40% marks in each type of evaluation for successful completion of a course (student should secure at least 6 marks in internal and 14 marks in external evaluation).

(v) Evaluation Pattern.

a. Internal evaluation - Two written test, each of 20 marks will be conducted i. e. two tests on two modules. 1st assignment after completing 6 weeks of teaching and 2nd on completion of 13th week of teaching. Question paper should be designed so that evaluation of CO, PO, PSO can be performed. 10 marks out of 15 will be assigned from these written tests. Remaining 5 marks will be assigned from other types of evaluation such as seminars, orals, poster presentation, open book challenging tests, surprise test, objective test on whole syllabus of the course (at least 40 questions of objective type must be designed), etc. for 5 marks at least two different types technique must be utilized.

b. External Evaluation - External evaluation will be done at the end of semester. For theory, 35 marks written examination will be conducted and time of examination will be 2-hours.

6. Declaration of Results:

(i) Declaration of result is based on the Semester Grade Point Average (SGPA) earned towards the end of each semester or the Cumulative Grade Point Average (CGPA) earned at the completion of all eight semesters of the programme and the corresponding overall alpha-sign or letter grades as given in Table 2. If some candidates exit at the completion of the first, second or third year of the four years Undergraduate Programmes, with Certificate, Diploma or Basic Degree, respectively, then the results of successful candidates at the end of the second, fourth or sixth semesters shall also be classified on the basis of the CGPA obtained in the two, four, six or eight semesters, respectively. Successful candidates at the end of the tenth semester of the integrated Master's Degree Programmes shall also be classified on the basis of CGPA obtained in the ten semesters of the Programmes. Likewise, the successful candidates of one year or two semesters Master's Degree Programme are also classified on the basis of the CGPA of two semesters of the Master's Degree Programme.

Table-2: Grades on degree certificate/mark sheet will be assigned to the students as per the

following table

Semester GPA/ Program CGPA Semester/Program	% of Marks	Alpha-Sign / Letter Grade Result
9.00-10.00	90-100	O (outstanding)
8.00 - <9.00	80.00 – <90.00	A+ (Excellent)
7.00 - <8.00	70.00-<80.00	A (Very Good)
6.00 - <7.00	60.00-<70.00	B+ (Good)
5.50 - <6.00	55.00-<60.00	B (Above Average)
5.00 - <5.50	50.00-<55.00	C (Average)
4.00 - <5.00	40.00-<50.00	P (Pass)
Below 4.00	< 40	F (Fail)
Ab	-----	Absent

(i) A student obtaining Grade F shall be considered failed and will be required to reappear in the examination. For non-credit courses ‘Satisfactory’ or ‘Unsatisfactory’ shall be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA.

1. Award of Major and Minor Degree:

(i) A student pursuing four-year multidisciplinary UG programme will be awarded an appropriate Honours/ Research degree in Major/ Core Subject on completion of VIII Semester with the minimum of 176 credits if he secures in that Subject at least 50% of the total credits for that programme. He shall thus study the specific number of Mandatory Core Courses, Core Electives, Vocational and Skill Courses and Field projects/ Internships connected to Core Subjects in eight semesters so as to cover at least 50% of the total credits.

(ii) In case of Research Degree, a student shall pursue research project and write dissertation in that Major in the VII and VIII semesters. On the basis of above rules and regulations under NEP-2020 following course frame work is adopted by the Prof. Ramkrishna More Arts, Commerce and Science College, Akurdi, Pune-411044 for the completing of four years honours degree in Major and Minor subjects.

2. Distribution of Credits across Four Years Degree Programmes: In general, for the four years’ bachelor’s degree programme, the distribution of credits will be as follows:

(a) Major (Core) Subject comprising Mandatory and Elective Courses:

i. Minimum 50% of total credits corresponding to Three/Four - year UG Degree- Mandatory Courses offered in all Four years;

ii. 2 credit course on Major Specific IKS shall be included under Major;

iii. Elective courses of Major will be offered in the third and/or final year.

iv. Vocational Skill Courses, Internship/ Apprenticeship, Field Projects, Research Projects connected to Major first to fourth year.

(b) Minor Subject: 18-20 Credits

i. The Minor subjects may be from the different disciplines of the same faculty of DSC Major (Core) or they can be from different faculty altogether.

ii. The credits of Minor subjects shall be completed in the first three years of UG Programme.

(b) Generic/ Open Elective Courses (OE): 10-12 credits

- i. It is to be offered in I and/or II year
- ii. Faculty-wise baskets of OE shall be prepared by University/ Autonomous Colleges.
- iii. OE is to be chosen compulsorily from faculty other than that of the Major.
- (c) Vocational and Skill Enhancement Courses (VSEC): 14-16 credits

Vocational Skill Courses (VSC): 8-10 credits, including Hands on Training corresponding to the Major and/or Minor Subject:

- i. To be offered in first to three years;
- ii. Wherever applicable vocational courses will include skills based on advanced laboratory practicals of Major

Skill Enhancement Courses (SEC): 06 credits

- i. To be offered in I and II year;
- ii. To be selected from the basket of Skill Courses approved by University/ Autonomous Colleges

(a) Ability Enhancement Courses (AEC), Indian Knowledge System (IKS) and Value Education Courses (VEC): 14 Credits

- AEC: 08 credits

- i. To be offered in I and II year
- ii. English: 04 Credits
- iii. Modern Indian Language: 04 credits

- iv. To be offered from the Basket approved by the College;

The focus for both languages should be on linguistic and communication skills.

- IKS: 2 Credits

- i. To be offered in I Year
- ii. Courses on IKS to be selected from the basket of IKS courses approved by the Colleges

- VEC: 04 Credits

- i. To be offered in I year
- ii. Value Education Courses (VEC) Environmental Science Education (Compulsory), Understanding India, and Digital and Technological Solutions.

(a) Field Projects/ Internship/ Apprenticeship/ Community Engagement and Service corresponding to the Major (Core) Subject, Co-curricular Courses (CC) and Research Project

- Internship/Apprenticeship corresponding to the Major (Core) Subject: 8 Credits
Field Projects/Community Engagement and Service corresponding to the Major (Core) Subject: minimum 4-6 credits

To be offered in II, and III years of UG Degree Programmes.

- Co-curricular Courses (CC) such as Health and Wellness, Yoga education sports, and fitness, Cultural Activities, NSS/NCC and Fine/ Applied/ Visual/ Performing Arts: 8 credits. To be offered in I and/or II year

- Research Projects: 12 credits

To be offered in the final year for 4-year Honours with Research UG Degree The UGC Regulations, 2021 permit up to 40% of the total courses being offered in a particular programme in a semester through the Online Learning Courses offered through the SWAYAM platform and/or other State Level Common Platforms which can be developed in due course with the participation of different Universities/ HEIs. Abbreviations: Generic/ Open Electives: GE/OE; Vocational Skill and Skill Enhancement Courses: VSEC; Vocational Skill Courses: VSC; Skill Enhancement Courses: SEC; Ability Enhancement Courses: AEC; Indian Knowledge System: IKS; Value Education Courses: VEC; OJT: On Job Training; Internship/ Apprenticeship; Field projects: FP; Community engagement and service: CEP; Co- curricular Courses: CC; Research Methodology-RM; Research Project: RP Note: The Credit Distribution Table given above is illustrative only. The Universities/ Autonomous Colleges may suitably modify within the broader framework of credit distribution across six verticals.

**P.D.E. A's. Prof. Ramkrishna More Arts, Commerce and Science College
Akurdi,Pune-411044 (Autonomous) Affiliated to Savitribai Phule Pune
University**

**Revised Credit Framework / Structure for NEP-2020(II); CBCS Pattern-2024 with
two Major at FY**

Implemented from Academic Year 2024-25

Level / Difficulty	Sem	Subject-1				Subject-2	GE/OE	SE C	IKS	AE C	VE C	C C	
Certificate													
4.5 / 100	I	4T + 2P/T				4T + 2P/T	2T	2T/P	2T (General)	2T	2T	0	
	II	4T + 2P/T				4T + 2P/T	2T/P	2T/P	0	2T	2T	2	
Exit option: Award of UG Certificate in Major with 44 credits and an additional 4 credits core NSQF course/ Internship OR Continuation with Major and Minor Continue option: Student will select one subject among the (subject 1, subject 2 and subject 3) as major and another as minor and the subject will be dropped.													
Diploma													
Level / Difficulty	Sem	Credits Related to Major				Subject-2: Minor	GE/OE	SE C	IKS	AE C	VE C	C C	
		Major Core	Major Elective	VSC	FP / CEP / OJT								
5.0 / 200	III	4T + 2P/T	0	2T/P	2 FP	2T+ 2T/P	2T	0	2T (Major Specific)	2T	0	2	
	IV	4T + 2P/T	0	2T/P	2 CEP	2T + 2P/T	2T/P	2T/P	0	2T	0	2	
Exit option: Award of UG Diploma in Major and Minor with 88 credits and an additional 4 credits core NSQF course/ Internship OR Continuation with Major and Minor													
Three years Graduation Degree													
5.5 /300	V	8T + 4P/T	4T + 2P/T	2T/P	2 FP/RP	0	0	0	0	0	0	0	
	VI	8T + 4P/T	2T + 2P/T	2T/P	4 OJT	0	0	0	0	0	0	0	
	Total Credits	48	10	8	10	20	8	6	4	8	4	6	
Four Years Graduate Degree with Honours (Major and Minor subjects)													
6.0 /400		10T + 4P/T	2T + 2P/T	0	0	4T RM	0	0	0	0	0	0	
		10T + 4P/T	2T + 2P/T	0	4 OJT	0	0	0	0	0	0	0	
	Total Credits	76	18	8	14	24	8	6	4	8	4	6	
Four Years Graduate Degree with Honours (Research)													
6.0		6T + 4P/T	2T + 2P/T	0	4 RP	4T RM	0	0	0	0	0	0	

/400		6T + 4P/T	2T + 2P/T	0	8 RP	0	0	0	0	0	0	0	
	To tal Cre dits	68	18	8	22	24	8	6	4	8	4	6	

Abbreviations:

VSC - Vocational Skill Course;

FP – Field Project

AEC – Ability Enhancement Courses

GE/OE – Generic or Open elective courses

T – Theory **P** – Practical

SEC – Skill Enhancement Course;

CEP – Community Engagement Project

VEC – Value Education Course

RP – Research Project

IKS – Indian Knowledge System

OJT – On Job Training

CC – Curricular Courses

RM – Research Methodology

1. A student can select two subject from the same faculty in first year. **At second year student will select any one subject from subject 1 and 2 at first year as major and another subject will be then minor.**
2. **VSC, IKS-2, OJT, FP, CEP, RP, RM should be related to Major subject**
3. OE/GE – Must be selected from basket approved by college and **selected from the faculty other than faculty of Major subject.**
4. **SEC should be selected from the basket of same faculty approved by the college.**
5. Each theory course may be of 2 or 4 credit; Each practical course should be of 2 credit only.
6. For those subject's practical cannot be conducted, they have to convert practical credits into theory credits. The decision should be taken BOS of respective subject.
7. This credit framework is applicable to all faculties in the college. The courses which are under AICET, they must take approval to this framework from AICET or respective body.
8. For any programs in any type course where practical are included (Major, Minor, VSC, SEC, GE/OE: Percent practical should be in the range 30 to 50%.

**Post Graduate Degree Course Framework under Autonomy as per NEP-2020 2023 and
2024 Pattern**
Implemented from Academic Year 2023-24

Sem.	Major Courses	Major Elective Courses	Min or Courses	FP/OJT/CEP	Total Credits
I	14 Credits (T + P) or (T only)	4 credits (T + P) or (T only)	RM 4 Credits (T)	0	22-Credits
II	14 Credits (T + P) or (T only)	4 credits (T + P) or (T only)	0	OJT (4 Credit) (P)	22-Credits
III	14 credits (T + P) or (T only)	4 credits (T + P) or (T only)	0	Research Project-I (4 credits) (P)	22- Credits
IV	12 credits (T + P) or (T only)	4 credits (T + P) or (T only)	0	Research Project-II (6 credits) (P)	22 - Credits
Total Credits	54 Credits	16 Credits	4 Credits	14 Credits	88 Credits

Important Note:

1. Theory course may be 2 or 4 credit.
2. Practical course for any type of course will be of 2 credits.
3. For any programs in any type course where practical are included (Major, Minor, VSC, SEC, GE/OE: Percent practical should be in the range 30 to 50%.

Long Forms:

T-Theory; **P**- Practical; **RM** – Research methodology; **RP** - Research Project; **OJT** – On Job training;

P. D. E. A's.

Prof. Ramkrishna More College, Akurdi, Pune 411044

Graduate and Honors Degree Course Framework under Autonomy as per NEP-2020

With Major B.C.A. (Science)

Sem.	Subject-1 (Major)	Major Elective Courses	Subject-2 (Minor)	VSC	IKS	FP/OJT/CEP	GE/OE	SEC	AEC	VEC	CC	Total Credits
First Year Certificate Course												
I	BSMAT-111 BSMAT-112 BSMAP-113	0	2 Theory + 1 Practical Other than BCA	0	GEIKT- 111	0	BSGET-111	BSSEP-111	Marathi (MAAET- 111) /Hindi (HIAET-111)	Environment Awareness VEEAT-111	0	22
II	BSMAT-121 BSMAT-122 BSMAP-123	0	2 Theory + 1 Practical Other than BCA	0	0	0	BSGET-121	BSSEP-121	Marathi (MAAET- 121) /Hindi (HIAET-121)	Democracy and Indian Constitution VEPOT-121	Physical Education CCPEP-121	22
Second Year Graduate Diploma												
	Major		Minor	VSC	IKS	FP/OJT/CEP	GE/OE	SEC	AEC	VEC	CC	Total Credits
III	BSMAT-231 BSMAT-232 BSMAP-233	0	1 Theory + 1 Practical Other than BCA	BSVST-231	BSIKT- 231	Field Project (2 Credit) BSFPP-231	BSGET-231	0	1 theory English AEENT-231		CCHRT-231 Human Rights	22
IV	BSMAT-241 BSMAT-242 BSMAP-243	0	1 Theory + 1 Practical Other than BCA	BSVSP-242	0	Community Engagement and Service (2 Credit) BSCEP-241	BSGET-241	BSSET-241	1 theory English AEENT-241		CCCST-241 Cyber Security	22
Third Year Graduate Degree												
V	BSMAT-351 BSMAT-352 BSMAP-353 BSMAP-354	BSMET-351-A (4 Credit) BSMEP-352-A Or BSMET-351-B (4 Credit) BSMEP-352-B		BSVST-351	0	Research project (2 Credit) BSRPP-351	0	0	0	0	0	22
VI	BSMAT-361 BSMAT-362 BSMAP-364 BSMAP-364	BSMET-361A BSMEP-361A Or BSMET-361B BSMEP-361B		BSVSP- 351	0	OJT (4 Credit) BSOJP-361	0	0	0	0	0	22

Courses Offered by B.C.A(Science) Department (Under AICTE) at First year of Graduation P-24

Major B.C.A.(Science) Courses			
Semester	Course code	Generic Name	Title of the paper
I	BSMAT111	BCA(Science) theory paper-1	Problem Solving and Programming in 'C'
	BSMAT112	BCA(Science) theory paper-2	Fundamentals of Computer
	BSMAP113	BCA(Science) practical paper-1	C Lab
II	BSMAT121	BCA(Science) theory paper-3	Advanced C Programming
	BSMAT122	BCA(Science) theory paper-4	Object Oriented Programming using C++
	BSMAP123	BCA(Science) practical paper-2	Advanced C and OOPs using C++ Lab
SEC Related to BCA (Science) Major			
I	BSSEP111	Skill BCA (Science) Practical-I	Programming foundation with HTML and CSS
II	BSSEP121	Skill BCA (Science) Practical-II	Python Programming Laboratory
Ability Enhancement Course (Marathi Or Hindi)			
I	HIAET111	Ability Enhancement Course	Hindi
II	HIAET121	Ability Enhancement Course	Hindi
IKS			
I	GIKST-111	Indian knowledge system BCA (Science) paper	A Basic Course on Indian Knowledge System
VEC			
I	VEAET111	Value Education Courses	Environmental Science
II	VEPOT121	Value Education Courses	Democracy and Indian Constitution
CC			
II	CCPEP121	Co- curricular Courses	Physical Education
OE/GE Choice Subject from Arts and Commerce Basket			

Minor B.C.A.(Science) Courses			
Semester	Course code	Generic Name	Title of the paper
I	BSMIT111	Minor BCA(Science) Theory-1	Fundamentals of Digital Electronics
	BSMIT112	Minor BCA(Science) Theory-2	Mathematics Foundations to Computer Science - I
	BSMIP113	Minor BCA(Science) Practical-1	Electronics Lab-1
II	BSMIT121	Minor BCA(Science) Theory-3	Electronic Operating Systems
	BSMIT122	Minor BCA(Science) Theory-4	Computer Organization
	BSMIP123	Minor BCA(Science) Practical-2	Electronics Lab-2

SEMESTER I

NEP-2020: First Year UG Major BCA(Science)

Course Code: BSMAT-111

Problem Solving and Programming in 'C'
allotted: 30 Lectures

Course Type: Theory Course Name:

Credits allotted: 2 credits Lectures

Course Objectives:

CO1: Understand basic terminology of computers, problem solving, programming Languages and their evolution (Understand)

CO2: Create specification from problem requirements by asking questions to disambiguate the requirement statement. (Create)

CO3: Design the solution from specification of a problem and write pseudo code of the algorithm using basic building blocks or structured programming constructs (Sequence, Selection and Repetition statement). (Create)

CO4: Translate an algorithm into a C computer program (Create)

CO5: Testing and analyzing programs using debugging tools. (Analyze)

Prerequisite: This is an introductory programming course and hence no prerequisites

Chapter No	Name of the Chapter	Lectures Assigned
1	Problem Solving, Algorithms and Flowchart	8L
2	Introduction to Programming Concepts	10L
3	Control and Iterative Structures	8L
4	Arrays and Functions	9L

MODULE-1 [12 L+3T]

	Course Contents	
1.	Problem Solving, Algorithms and Flowchart	[8L]
	Problems And Problem Instances, Generalization and Special Cases, Types of Computational Problems, Classification of Problems, Analysis of Problems, Solution Approaches, Algorithm Development, Analysis of Algorithm, Efficiency, Correctness, Role of Data Structures in Problem Solving, Problem-Solving Steps (Understand the Problem, Plan, Execute, And Review), Breaking the Problem into Sub problems, Input/output Specification, Input Validation, Pre and Post Conditions.	
2.	Introduction to Programming Concepts	[10L]
	Structured Programming Concepts: Sequence (Input/Output/Assignment), Selection (If, I Else) And Repetition (For, While, Do-While) Statements, Control Structure Stackin and Nesting. Different Kinds of Repetitions: Entry Controlled, Exit Controlled, Counter Controlle Definite, Indefinite and Sentinel-Controlled Repetitions. Pseudocode and Flowchart Definition and Characteristics of Algorithms, Standard Algorithm Format. Problem Involving Iteration and Nesting: Displaying Different Patterns and Shapes Using Symbo and Numbers, Generating Arithmetic and Geometric Progression, Fibonacci and Oth Sequences, Approximate Values For π , Sin(x), Cos(x), Etc. Using Taylor Series. Differe Kinds of Data in The Real World and How They are Represented in The Comput Memory. Representation of Integers: Signed Magnitude Form, 1's Complement and 2 Complement. Representation of Real Numbers: IEEE 754 Floating Point Representatio Representation of Characters: ASCII, UNICODE. C Language: Introduction to Programming Languages, Different Generations Programming Languages. Typed Vs Typeless Programming Languages, History of Language, An Empty CProgram. C Language Counterparts For Input (scanf()), Outp (printf()) Statements, Assignment, Arithmetic, Relational and Logical Operators. If, I Else Statements, For, While,	

	Do-While Statements. Data Types. Translatin Pseudocode/Algorithm to C Program. Incremental Compilation and Testing of The Program. Simple Problems Involving Input, Output, Assignment Statement, Selection and Repetition. Good Coding Practices.	
	MODULE-[12 L+3T]	
3.	Control and Iterative Structures	[8 L]
	Problems on Numbers: Extracting Digits of a Number (Left to Right and Right to Left), Palindrome, Prime Number, Prime Factors, Amicable Number, Perfect Number, Armstrong Number, Factorial, Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum and Average) on a Sequence of Numbers which are Read using Sentinel-Controlled Repetition using only a few Variables. C Language: else-if Ladder, switch Case, Increment/Decrement Operators, break and continue Statements	
4.	Arrays and Functions	[9L]
	Modular Programming, Top-Down and Bottom-Up Approaches to Problem Solving. Recursion.Problems on Arrays: Reading and Writing of Array Elements, Maximum, Minimum, Sum, Average, Median and Mode. Sequential And Binary Search. Any one Sorting Algorithm. MatrixOperations. C Language: Function Definition and Declaration (Prototype), Role of Return Statement, One Dimensional and Two-Dimensional Arrays. String Functions. Other Operators, Operator Precedence and Associativity. Debugging.	
Reference Books : 1. Brian W. Kernighan and Dennis Ritchie, The C Programming Language, 2nd edition, Pearson, 2015. 2. Jeri Hanly and Elliot Koffman, Problem Solving and Program Design in C, 8th edition, Pearson, 2015.		
Course Outcome : After studying this course, student will able to – CO-1: define the concept of Problem and problem solving techniques, Algorithm and its steps, and Flow Charts; CO-2: explain fundamentals of C language, program development life cycle and various Operators of C language; CO-3: understand the Console based I/O functions; CO-4: interpret the importance of using conditional and looping statements; CO-5: describe function definition and declaration with its types; CO-6: define Array with its types and Bounds Checking.		

SEMESTER I		
NEP-2020: First Year UG Major BCA(Science) Course Code: BSMAT-112 Course Name: Fundamentals of Computer Lectures allotted: 30 Lectures		
Course Type: Theory Credits allotted: 2 credits		
Chapter No	Name of the Chapter	Lectures Assigned
1	Introduction to Computers	5L
2	Computer Peripherals	6L
3	Demonstration & Learning the concept of Computer Peripherals	4L
4	Computer Software	7L
5	Open Source Software	8L
MODULE-1 [12L+3T]		
	Course Contents	
Unit I	Introduction to Computers	[5L]
	Overview of computer systems and their components, Types of Computer, Block diagram of computer system, Input and output devices, Types of Programming Language: Machine language, Assembly language and High level language, Translator.	
Unit II	Computer Peripherals	[6L]
	Hardware and Motherboard: Introduction, Hardware upgrade and Components of Motherboard, Register Memory: Types and Functions of Computer Register, Cache Memory, Primary Memory: RAM, ROM, PROM and EPROM, Secondary Storage Devices: HDD and SSD, Introduction to Network devices: Hubs, Switches, Routers, NAS, MODEM, Access Points and Various cables.	
Unit III	Demonstration & Learning the concept of Computer Peripherals	[4L]
	Introduce computer components, Introduce hardware device (RAM, SMPS, Hard disk, Processor, Motherboard), Introduce Motherboard (Processor, Chipset, I/O Ports and connectors, CMOS, BUS)	
MODULE-2 [12L+3T]		
Unit IV	Computer Software	[7L]

	Introduction to Software, Types of Software: System Software and Application Software, Operating System: Types of Operating System, Functions of Operating System, Utility Programs: Anti-plagiarism software, Disk Cleaning and Defragmentation, Linux Commands	
Unit V	Open Source Software	[8L]
	Introduction: Open Source, Free Software and Free Software vs. Open Source software, Development tools IDE (Visual Studio and Eclipse) and LAMP, Open Source Projects: GNU/Linux, Wikipedia. Word press, Editors: Notepad++ , Vi ,Gedit, Difference between Word and Processor/Editors and IDE, Introduction to Google Apps: Google Docs ,Google Sheets , Google Forms and Applications.	
Reference Books: • P.K. Sinha and Priti Sinha, “Computer Fundamentals”, 3rd Edition, BPB Pub • John Walkenbach, Michael Alexander and Richard Kusleika, “Excel 2019 Bible”, Wiley Publication. • Steven Roman, “Writing Excel Macros with VBA”, O’reilly Publication Course Outcomes: After studying this course, students will be able to.. CO1: define working of computers and languages; CO2: define working of peripherals; CO3: demonstrate how to configure computer devices and computer components; CO4: distinguish between computer language; CO5: understand the usage of open source software, productivity application.		

SEMESTER I NEP-2020: First Year UG Major BCA(Science)		
Course Code: BSMAP-113 Practical Course Name: C Programming Laboratory credits Lectures allotted: 60 Lectures		Course Type: Credits allotted:2
Sr. No.	Assignment	No of Sessions
1.	Use of data types, simple operators (expressions)	01
2.	Use of decision making statements (if and if-else, nested structures)	01
3.	Use of decision making statements (switch case)	01
4.	Use of while loops, for loops	01
5.	Use of nested loops	01
6.	Use of standard library functions and menu driven programs	01
7.	Use of user defined functions	02
8.	Use of recursive functions	02
9.	Use of arrays (1-D array) and functions	02
10.	Use of multidimensional array (2-D arrays) and functions	02
	Total 15	

Course Outcome

After studying this course, student will able to –

- CO-1: use of data types and operators in programs;
- CO-2: solve the problem using decision making statements and loops;
- CO-3: solve problems using arrays;
- CO-4: solve problems using functions;

Course Code – VEAET111

Course Type-Theory

Course Name: Environmental Awareness

Credits allotted:2 credits No. of Periods: 30

MODULE-1**[12 L + 3T]****Unit 1: Introduction to environmental studies****[02 L]**

- Multidisciplinary nature of Environmental studies;
- Scope and importance; Concept of sustainability and sustainable development.

Unit 2: Ecosystems**[06 L]**

- Concept and structure.
- Ecosystem functions.
- Types of Ecosystem.

Unit 3: Biodiversity and Conservation**[07 L]**

- India as a mega-Biodiversity nation; Endangered and endemic species of India
- Threats to Biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions;
- Conservation of Biodiversity: In-situ and Ex-situ conservation of Biodiversity.

MODULE-2**[12 L + 3T]****Unit 4: Environmental Pollution****[07 L]**

- Environmental pollution: types, causes, effects and controls; Air, Water, and Soil pollution.
- Solid and liquid waste management: Control measures of urban and industrial waste.

Unit 5: Environmental Programs and Policies**[08 L]**

- Developed Countries, Developing Countries.
- New Environmental policy of India; Government initiatives.

References:

1. Singh R. B. (1993) Environmental Geography. Delhi, India: Heritage Publishers.
2. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders.
3. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
4. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.
5. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
6. Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
7. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
8. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.

Course Code- GIKST-111

Prof. Ramkrishna More Arts, Commerce and Science College Autonomous College)
Akurdi Pradhikaran, Pune 411044. www.pdearmacs.edu.in

GIKST-111

A Basic Course on Indian Knowledge System

02

Course Duration: 01 Semester

Course Aim and Objectives:

Bhārata boasts a rich and versatile knowledge system and cultural heritage that has evolved over millennia. Originating during the Vedic period and the Saraswatī-Sindhu Civilization, and continuing through the Middle Ages to modern times, the Bhāratīya knowledge system has had a profound and enduring influence. The course “A Basic Course on Indian Knowledge System “ introduced in NEP 2020 This course focuses on the historical development of ideas in ancient society, exploring their implications for understanding the material world, as well as religious, social, and cultural beliefs. Upon closer examination, it becomes evident that religion, culture, and science are epistemologically interconnected within the Bhāratīya knowledge system. Bhārata has made invaluable contributions to society and the world across various spheres, including aeronautics, astronomy, mathematics, life science, medical science, architecture, polity, trade, art, music, dance, literature, and drama. By studying these interconnected areas, one can gain a comprehensive understanding of the depth and breadth of the Bhāratīya knowledge system and its cultural heritage.

The Indian Knowledge System course is not just an academic endeavor but a vital component of holistic education. It nurtures a deeper understanding of India's intellectual traditions and their relevance in contemporary times, fostering a balanced and enriched perspective on life and knowledge.

Learning Outcomes

- Understanding the foundational concepts and principles of IKS
- Appreciating the contributions of ancient Indian scholars and scientists
- Integrating IKS perspectives into modern academic and practical contexts
- Promoting cultural awareness and appreciation of India's intellectual heritage

Course Content 30 L; 2-Credits

UNIT -I: Bharatiya Civilization and Knowledge System (6 hours)

The primary sources of ancient Indian philosophy: Vedas and Upanishads, Overview of the six schools of Indian philosophy. Ancient Indian civilization: the discovery of the Saraswatī River and the Saraswatī-Sindhu civilization. The ancient Indian education system: Gurukul system, Takṣaśilā University, Nālandā University, and their notable alumni. History of knowledge export from Bhārata.

UNIT-II: Arts, Literature, and Scholars in Ancient India

Kaṇāda, Patañjali, Kauṭilya, Pāṇini, Thiruvalluvar, Ādi Śaṅkarācārya, Bhāskarācārya, and Mādhavācārya

UNIT-III: Ancient Science, Astronomy, and Mathematics

[आयाभट्ट आमि वराहमिहम् ह्यानांचे योगदान, िदाथा, जीवन, आमि गुरुत्वाकर्षणा या साणांक्षणांचे िहत्त्व, साणांक्षिकी प्रगती, जसे की सेज अस्त्याणांच्याबॅटरी िा डेल, प्रकाशाची वेगता, आमि म िवान वायुयान, वम दक ब्रह्मांडांश, उशास्त्र, भारतीय काल-िंगना, केरळ साणांख्यशास्त्र आमि खगोलशास्त्राचा मितहास व साणांस्कृती सूया, िृथ्वी, चाणांद्र ग्रिह, िृथ्वीच्या गोलाकार आमि घुंाट, िुरातत्वशास्त्र, शून्य, िाई, साणांख्यािप्राली, िायथागोरसचा िप्रेय, आमि वम दक गमित..

UNIT-IV: Ancient Engineering, Technology, and

UNIT-V: Life, Environment, and Health in Ancient India

(6 hours)

Ancient Indian Religions : Hinduism, Buddhism, Jainism, Sikhism : Teachings and Philosophies, Ancient agricultural practices, crop cultivation techniques, and innovations. Comprehensive healthcare systems integrating Āyurveda, yoga, and other traditional practices. Surgical techniques and procedures practiced in ancient India

[प्राचीन भारतीय िधा: म हागागााद्विधा बौद्धिधा, जनिधा, म सखिधा: म शमि आमि दशान, प्राचीन कृम ष प्रथा, फसल उत्पादन तागागाांरामि नवीन डिमि. आयुवेद, योग आमि ितर िशागागा िररक व्यस्थागागाांच्या सागागाायुक्तस्वास्थ्यव्यवस्था. प्राचीन भारतातील म ंत्रजन्य तागागाांरामि मप्रम या.]

Text books:

1. History of Science in India Volume-1, Part-I, Part-II, Volume VIII, by Sibaji Raha, et al. National Academy of Sciences, India and The Ramkrishan Mission Institute of Culture, Kolkata(2014).
2. Textbook on The Knowledge System of Bhārata by Bhag Chand Chauhan,

Reference Books:

1. A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century" by Upinder Singh:
2. Pride of India- A Glimpse of India's Scientific Heritage edited by Pradeep Kohle et al. Samskrit Bharati (2006).
3. Vedic Physics by Keshav Dev Verma, Motilal Banarsidass Publishers (2012).
4. "Indian Art and Culture" by Nitin Singhanian, McGraw Hill

F. Y. B. C. A. Semester I	
Fundamentals of Digital Electronics	
Course code: BSLMIT-111	No. of Credits: 2

Unit No.	Unit Title and Contents
Module 1	
1	Number Systems and Digital codes (8) Introduction to Decimal, Binary and Hexa-decimal number systems and their inter- conversions, binary addition and binary subtraction, 1's and 2's complement, Binary subtraction using 2's complement, Binary Coded Decimal code (Weighted and non-weighted, self-complimentary), Error detecting and correcting code : Parity code and Hamming code, Gray Codes, Gray to Binary and Binary to Gray conversion, Alphanumeric representation in ASCII codes
2	Logic gates and Boolean algebra (7) Introduction to logic system: Positive logic and Negative logic, Logic gates (NOT, AND, OR, NAND, NOR, XOR gate) with their symbol, Boolean equation and truth table. Introduction of CMOS and TTL logic families, Parameters like voltage levels, propagation delay, noise margin, fan in, fan out, power dissipation
Module 2	
I	Boolean algebra and Karnaugh's Map (7) Rules and laws of Boolean algebra, De-Morgan's theorem, simplification of Logic equations using Boolean algebra rules, NAND and NOR as a Universal gate. Min terms, Max terms, Boolean expression in SOP and POS form, conversion of SOP/POS expression to its standard SOP/POS form, Introduction to Karnaugh Map, problems based on SOP (up to 4 variables), digital designing using K Map.

2	Combinational Circuits(8L) Half adder and full adder, Parallel adder, Parallel Subtractor, 4-Bit Universal adder/Subtractor, applications of Ex-OR gates as parity checker and generator, study of Multiplexer(4:1) and Demultiplexer (1:4), Encoders: Decimal/BCD to binary, Priority encoder, Decoders: BCD to seven segment decoder, IC 74138 and IC 7447, Digital comparator
Text and Reference Books:	
1.	Digital Fundamentals: Floyd T. M., Jain R. P., Pearson Education
2.	Digital Electronics: Jain R. P., Tata McGraw Hill
3.	Digital Computer Design: M. Morris Mano, 3 rd Edition, PHI, New Delhi.

Course Outcomes (COs): On completion of the course, the students will be able to:	
CO1:	Study the various number systems.
CO2:	Explain and understand the necessity of basic logic gates and universal gates.
CO3:	Get familiar with concepts of digital electronics.
CO4:	Learn number systems and their representation.
CO5:	Understand basic logic gates, Boolean algebra.
CO6:	Simplify and design simple digital systems using Boolean algebra and K-Map.
CO7:	Study and design simple combinational circuits (construction and operations) using digital techniques

F. Y. B. C. A. Semester I	
Electronics Lab-1	
Course Code: BSMIP-113	Number of Credits : 02
Sr. No.	Title of Experiment/ Practical
Total 10 experiments should be performed by the student.	
1	Verify logic behavior of AND, OR, NAND, NOR, EX-OR, EX-NOR, Invert and Buffer gates.
2	Verify De- Morgan's theorem for 2 variables and verify NAND as a Universal Gate.
3	Convert BCD to Excess-3 code using NAND gate
4	To Convert Binary to Grey Code
5	Study of parity code generator and error detector.
6	Realize Decoder and Encoder circuit using Basic Gates.
7	Design and implement the 4:1 MUX using gates.
8	Design and implement the 1:4 DEMUX using gates.
9	Implementation of 4-Bit Parallel Adder Using 7483 IC.
10	Design and verify operation of half adder, full adder and half subtractor.
11	Implement Boolean function using logic gates in both SOP and POS
12	Study of Decimal to BCD/(Binary)Converter.
13	Study of Priority Encoder.

SEMESTER I**NEP-2020: First Year UG SEC BCA(Science)****Course Code: BSSEP111****Cours****e Type: Practical****Cours****e Name: Programming Foundation with HTML and CSS****Credi****ts allotted:2 credits****Lectures allotted: 60 Lectures**

1. Introduction to HTML
2. Working with List and Hyperlinks
3. Creating Tables using HTML tags
4. Working with Frames
5. Working with Forms and use of CSS
6. Functions in JavaScript and Carrying out Validation using JavaScript
7. Using Event Handling
8. Designing website using basic elements of HTML, CSS and JavaScript

SEMESTER I**NEP-2020: First Year UG MINOR BCA(Science)****Course Code: BSMIT-112 Course Type: Practical****Course Name: Mathematics****Foundation to Computer Science - I****Credits allotted:2****Lectures allotted: 30 Lectures****Course Content:****UNIT I: Set, Relation and Function:**

Set, Set Operations, Properties of Set operations, Subset, Venn Diagrams, Cartesian Products. Relations on a Set, Properties of Relations, Representing Relations using matrices and digraphs, Types of Relations, Equivalence Relation, Equivalence relation and partition on set, Closures of Relations, Warshall's algorithm.

Functions, properties of functions (domain, range), composition of functions, surjective (onto), injective (one-to-one) and bijective functions, inverse of functions.

Some useful functions for Computer Science: Exponential and Logarithmic functions, Polynomial functions, Ceiling and Floor functions.

UNIT II: Counting and Recurrence Relation:

Basics of counting, Pigeonhole principle, permutation, combination, Binomial coefficients, Binomial theorem.

Recurrence relations, modelling recurrence relations with examples, like Fibonacci numbers, the tower of

Hanoi problem. Solving linear recurrence relation with constant coefficients using characteristic equation roots method.

UNIT III:Elementary Graph Theory:

Basic terminologies of graphs, connected and disconnected graphs, subgraph, paths and cycles, complete graphs, digraphs, weighted graphs, Euler and Hamiltonian graphs.

Trees, properties of trees, concept of spanning tree. Planar graphs. Definitions and basic results on the topics mentioned.

UNIT IV:Matrix Algebra:

Types of matrices, algebra of matrices—addition, subtraction, and multiplication of matrices, determinant of a matrix, symmetric and skew-symmetric matrices, orthogonal matrix, rank of a matrix, inverse of a matrix, applications of matrices to solve system of linear equations, Eigen values and Eigen vectors, Caley-Hamilton theorem.

Text Books

1. Garg, Reena, Engineering Mathematics, Khanna Book Publishing Company, 2024. (AICTE Recommended Textbook)
2. Garg, Reena, Advanced Engineering Mathematics, Khanna Book Publishing Company, 2023. Model curriculum for UG Degree in BCA 30
3. Kolman B., Busby R. and Ross S., Discrete Mathematical Structures, 6th Edition, Pearson Education, 2015.
4. Deo Narsingh, Graph Theory with Application to Engineering and Computer Science, Prentice Hall, India, 1979.
5. Vasishtha A. R. and Vasishtha A. K., Matrices, Krishna Prakashan, 2022. Reference Books
1. Grimaldi Ralph P. and Ramana B. V., Discrete and Combinatorial Mathematics: An Applied Introduction, Fifth Edition, Pearson Education, 2007.
2. Rosen Kenneth H. and Krithivasan Kamala, Discrete Mathematics and its Applications, McGraw Hill, India, 2019.
3. West Douglas B., Introduction to Graph Theory, Second Edition, Pearson Education, 2015

Web Resources

1. <https://nptel.ac.in/courses/106103205>
2. <https://nptel.ac.in/courses/111101115>

Course Outcomes:

- CO1: Provide a basic understanding of fundamental mathematical concepts such as sets, functions, matrix algebra, and discrete mathematics.
- CO2: This course enables the students to use mathematical models and techniques to analyze and understand problems in computer science.
- CO3: This course demonstrates how the mathematical principles give succinct abstraction of computer science problems and help them to efficiently analyze.

प्रथम अयन (First Semester)

पाठ्यचर्या:

2 श्रेयांक (2 credit)

HIAET-111

AEC सामान्य वृहदी – I (कहानी, कविता और वनबंध लेखन)

पाठ्यक्रम का पररणाम –

- CO1 – छात्र कहानी के विकासक्रम को समझ लेंगे ।
- CO2 - छात्र कहानी की सामयिक उपयोगिता को अपना लेंगे ।
- CO3 – छात्र काव्य कला को समझेंगे ।
- CO4 - छात्र कविता की सामयिक, रािनैवतक, शैक्षिक समस्याओं से अलग होंगे ।
- CO5 – छात्रोंको पयारि का बोध होगा ।

इकाई	पाठ्यक्रम	विसकाएँ
इकाई-I	अ] कहानी विा - १. एक टोकरी भर वमटटी- माधिराि सप्रे २. कफ़न-प्रेमचोंद ३. आकाश द्वीप- ियशोंकर प्रसाद ४. क्लेम- मोहन राकेश ५. भोलाराम का िीि-हररशोंकर परसाई	12
इकाई-II	आ] कवििा विा- १. फूल की चाह- माखनलाल चतुिेदी २. िन-िन का चेहरा एक- गिानन माधि मुक्तिबोध ३. माँ- वचत्रा डोंगे ४. नॉट आउट- प्रीि कोटला ५. स्वदेश के प्रवत -सुभद्रा कुमारी चौहान	10
इकाई -III	इ] सावहत्येत्तर पाठ्यक्रम १. वनबोध लेखन(वनबोध लेखन के विषय) पयाारि, आत्मकथा, विज्ञान, समस्या, समाचार आवद २. पत्राचार लेखन : सरकारी , गैर सरकारी, वनमोंत्रि पत्र	8

प्रश्न पत्र का प्रारूप -

कुल अंक - 50

आंतरिक मूल, यांकन - 30% (15 अंक)

- 1) 15 अोंकों के वलए अध्ययन यात्रा/ पुस्तक परीक्षि/ क्षेत्र भेंट/
लेखक/कवि का साक्षात्कार/छात्र गोष्ठी मौक्तखक परीक्षा/ िलिखत
परीक्षा / पररयोिना / ग्रोंथालय काया / समूवहक चचाा / प्रस्तुवत
/

शोध पररयोिना / अनुिाद काया अवद।

कुल अंक - 70% (35 अंक)

प्रश्न 1 - इकाई I पर चार प्रश्न, विसमें से दो प्रश्नों के उत्तर वलखने हैं। (

शब्द सीमा 300)

2 x

7=14 प्रश्न 2 - इकाई II पर चार प्रश्न, विसमें से दो प्रश्नों के उत्तर

वलखने हैं।

2 x

7 = 14

प्रश्न 3 - दोनों इकाइयों पर सात बहु पयाायी प्रश्न।

7 x

1 = 7

संदर्ग ग्रंथ -

१. व्होंदी कथाधारा- सों.दूधनाथ वसोंह
२. गद्य िंभि- सों. रािेंद्र खैरनार
३. िसुधा- वचत्रा डोंगे
४. वफर से शून्य- प्रीि कोटला
५. व्होंदी कविता- सों.दूधनाथ वसोंह

AEC**B.C.A.****सत्र - पहिले****विषय - व्यावहारिक मराठी आणि कथा साहित्यप्रकार - १ (MAAET-111)****(पाठ्यपुस्तक - मराठी कथा दर्शन - संपा.डॉ.शिरीष लांडगे ,सुनिता पवार ,डॉ.शांताराम चौधरी)**

CO 1	अर्ज लेखनाचे महत्व समजून घेतील.
CO 2	विविध क्षेत्रातील मराठीचा अभ्यास करण्यासाठी प्रसारमाध्यमाचे स्वरूप व त्यातील भाषण व्यवहार समजावून देणे.
CO 3	साहित्य विषयक अभिरुची व सारग्रहण प्रक्रिया विकसित करणे.
CO4	साहित्य विषयक अभ्यासातून जीवनविषयक समज विकसित करणे.

घटक	तपशील	श्रेयांक	घड्याळी तास
१	अ) अर्जलेखनाचे स्वरूप व महत्व १.अर्जलेखनाचे विविध नमुने - विनंती अर्ज, तक्रार अर्ज , नोकरीविषयक अर्ज, माहिती अधिकारातील अर्ज , संगणकीय अर्ज, इ. विविध प्रकार आ) लेखनकौशल्ये १.भाषांतरलेखन २.सारांशलेखन ३.परिच्छेद लेखन	१	१५
२	अ) कथा : स्वरूप ,संकल्पना, परंपरा आणि कथेचे घटक आ) मराठी कथा दर्शन - संपा.डॉ.शिरीष लांडगे ,सुनिता पवार डॉ.शांताराम चौधरी १.कांचनमृग - जी.ए.कुलकर्णी २.अथेन्सचा प्लेग - जयंत नारळीकर ३.मारवा - आशा बगे ४.एका यंत्र मानवाच्या मनाचा शोध - निरंजन घाटे ५.पुढल्या हाका - सुबोध जावडेकर	१	१५
	एकूण	२	३०

१. पाठ्यपुस्तक-मराठी कथा दर्शन , संपा.डॉ.शिरीष लांडगे ,सुनिता पवार, डॉ.शांताराम चौधरी
२. व्यावहारिक मराठी , ल.रा.नसिराबादकर, फडके प्रकाशन
३. व्यावहारिक व उपयोजित मराठी ,डॉ.वेदश्री थिंगळे, डॉ. प्रभाकर जोशी
४. व्यवहारिक मराठी, विद्यापीठ प्रकाशन पुणे
- ५ .व्यावहारिक मराठी,डॉक्टर कल्याण काळे, डॉक्टर दत्तात्रय मुंडे, निराळी प्रकाशन पुणे.
- ६ . व्यावहारिक मराठी,डॉक्टर लीला गोविलकर व डॉक्टर जयश्री पाटणकर
- ७ . व्यावहारिक मराठी, डॉक्टर सयाजीराव मोकाशी व रंजना नेमाडे
- ८ . प्रसारमाध्य साठी लेखन कौशल्य, मुक्त विद्यापीठ नाशिक
- ९ . व्यवहारिक उपयोजित आणि मराठी प्रसार माध्यमे संपादक, डॉक्टर संदीप सांगळे.
- १० . मराठी भाषा उपयोजन आणि सर्जन, प्रा. सुहास कुमार बोबडे .
११. उपयोजित मराठी,डॉक्टर केतकी मोडक
- १२ . प्रसार माध्यमे आणि मराठी भाषा, संपादक भास्कर शेळके
- १३ . व्यवहारी गोपीचंद मराठी आणि प्रसारमाध्यमे कार्य शैली, संपादक डॉक्टर संदीप सांगळे
१४. व्यवहारिक आणि सूचित मराठी, डॉ. मनोहर रोकडे

SEMESTER - II

SEMESTER II		
NEP-2020: First Year UG Major BCA(Science) Course Code: BSMAT-121 Course Name: Advanced 'C' Programming Lectures allotted: 30 Lectures		
Course Type: Theory Credits allotted: 2 credits		
Chapter No	Name of the Chapter	Lectures Assigned
1	Preprocessor	4L
2	Pointers	7L
3	Strings	4L
4	Structures and Union	11L
5	File Handling	4L
MODULE-1 [12L+3T]		
	Course Contents	
Unit I	Preprocessor	[4L]
	Concept, Format of preprocessor directives, File inclusion directives (#include), Macro substitution directives (#define), nested macros, parameterized macros; Macros versus functions, #error / #pragma directives, Conditional compilation (#if/#ifdef/#else/#elif/#endif), Predefined macros (_DATE_ / _TIME_ / _FILE_ / _LINE_ / _STDC_) Reference Book 2: Page No 239-269(Chapter No.7)	
Unit II	Pointers	[7 L]
	Concept – reference & dereference, Declaration, definition, initialization & use, Types of pointers; Pointer Arithmetic, Multiple indirection; parameter passing – call by value and call by reference Arrays & Pointers - Pointer to array, Array of pointers; Functions & pointers - Passing pointer to function, returning pointer from function, function pointer, Pointers & const.; Dynamic memory management, Allocation, Resizing, Releasing, Memory leak / dangling pointers. Reference Book 1: Page No 93-122(Chapter No.5)	
Unit III	Strings	[4 L]

	Concept, Declaration, definition, initialization, format specifiers, String literals/ constants & variables – reading & writing from & to console, Importance of terminating NULL character, Strings & pointers; Array of strings & array of character pointers, User defined functions, predefined functions in string.h - strlen, strcpy, strcat, strcmp, strcmpi, strrev, strlwr,strupr, strset, strchr, strrchr, strstr, strncpy, strncat, strncmp, strcmpi, strnset, strtok, Command line arguments – argc and argv. Reference Book 2: Page No 333-359(Chapter No.9)	
MODULE-2 [12L+3T]		
Unit IV	Structures and Union	[11L]
	Concept, Declaration, definition, initialization, accessing structure members (. operator), Array of structures, Pointers to structures, declaring pointer to structure; Accessing structure members via pointer to structure, Structures & functions; Passing each member of structure as a separate argument, Passing structure by value / address; Nested structures, typedef & structures. Unions - Concept, Declaration, definition, accessing union members, Difference between Structures & unions; structures within union, union within structures, pointers and unions, nested unions; enumerated data types, Bit fields, Concept, need, use, multi-file programs. Reference Book 1: Page No 147-149(Chapter No.6) Reference Book 2: Page No 539-547(Chapter No.15) Reference Book 1: Page No 127-147(Chapter No.6) Reference Book 2: Page No 369-391(Chapter No.10)	
Unit V	File Handling	[4 L]
	Concept of streams, need, Types of files, Operations on text & binary files, Random access file; library functions for file handling – fopen, fclose, fgetc, fseek, fgets, fputc etc. Reference Book 2: Page No 425-463(Chapter No.12)	

Reference Books:

Reference Book 1: The C Programming Language (Second Edition) – By B. W. Kernighan & D. M. Ritchie

Reference Book 2: Y S Kanetkar, “Let Us C”, BPB Publications

Reference Book 3: Programming with C – By Byron S Gottfried (Schaum’s Outlines)

Course Outcome

After studying this course, student will able to –

CO-1: define Pre-processor directives;

CO-2: describe and explain pointers;

CO-3: manipulate strings using library functions;

CO-4: explain pointers, structures and unions;

CO-5: exercise files concept to show input and output of files.

SEMESTER II**NEP-2020: First Year UG Major BCA(Science)**

Course Code: BSMAT-122

Course Type: Theory

Course Name: object oriented programming and C++

Credits allotted: 2credits

Lectures allotted: 30 Lectures

Chapter No	Name of the Chapter	Lectures Assigned
1	Introduction to C++	3L
2	Object oriented Concepts	3L
3	Classes and Objects	4L
4	Function in C++	4L
5	Constructors and Destructors	4L
6	Inheritance	4L
7	Virtual Function & Polymorphism	4L
8	Files and Exception Handling	4L

MODULE-1 [12L+3T]

	Course Contents	
Unit I	Introduction to C++	[3L]

	1.1. Basics of C++, 1.2. Structure of C++ Program, keywords in C++, 1.3. Data types hierarchy in C++, 1.4. Operators in C++: Scope resolution operator, Insertion and Extraction Operator New and Delete operators. 1.5. Reference variable. 1.6. Manipulators function: endl, setw, set fill, set precision. Chapter 1: Moving from C to C++ Page No: 1 to 23 Chapter 2: Reference Variable Page No:27 to 42	
Unit II	Object oriented Concepts	[3L]
	2.1. Object oriented concepts 2.2. Features, 2.3. Advantages and Applications of OOP 2.4. Difference between Procedure oriented programming and object oriented programming. Book 3: Module 1 C++ Fundamentals Page No: 1 to 83	
Unit III	Classes and Objects	[4L]
	3.1. Structures and class, Class, Object, Access specifies, 3.2. Class members, 3.3. Defining member functions: Inside and outside the class definition, 3.4. Creating objects. String class, operation on string, 3.5. 'this' pointer. 3.6. Array and Array of Objects 3.7 Type Casting in C++ Book 2: Chapter 5 Introduction to C++ Classes Page No: 88 to 132 This pointer page No: 202 to 207 Book 3 Module 4: Array, String & Pointers Page No:130 to175	
Unit IV	Function in C++	[4L]
	4.1. Call by reference, Return by reference, 4.2. Function overloading and default arguments 4.3. Inline function 4.4. Passing and returning objects from functions, Static class members 4.5. Friend Concept – Function, Class Book 2 : Chapter 3 Default Function Argument Page No: 47to 57, Function Overloading Page No: 247 to 252 Inline function : Module 8 Classes and Objects Page No:130to 175	
MODULE-2 [12L+3T]		
Unit V	Constructors and Destructors	[4L]
	5.1. Memory allocation and static data members 5.2. Definition of constructor Types of constructors: Default Constructor 5.3. Constructor with default arguments 5.4. Parameterized Constructor 5.5. Copy Constructor	

	5.6. Overloaded constructors in a class 5.7. Destructors Book 2 Chapter 6 Constructor and Destructor Functioning Page No: 141 to 180	
Unit VI	Inheritance	[4L]
	6.1. Introduction 6.2. Types of Inheritance: Single inheritance Multiple inheritance, Multilevel inheritance Hierarchical Inheritance Hybrid inheritance. 6.3. Derived Class Constructors and Destructors 6.4. Ambiguity in multiple Inheritances, virtual base classes, Abstract base class. Book 2 Chapter 10 Class Inheritance Page No: 331 to 341 Book3 Module 10 Inheritance, Virtual Function and Polymorphism Page No: 409 to 440	
Unit VII	Virtual Function & Polymorphism	[4L]
	7.1. Introduction, Pointer to object, Pointer to derived 7.2. class, overriding member functions, Virtual function, Rules for virtual functions, pure virtual function, Run- time type information (RTTI) Book 3 Module 10, Inheritance, Virtual Functions and Polymorphism Page No:441 to 455	
Unit III	Files and Exception Handling	[4L]
	8.1. Introduction to File 8.2. Classes for File Stream and Operations 8.3. Opening and Closing of File 8.4. Introduction to Exception Handling Mechanism Book3 Module 12 Exceptions, Templates & Other Advanced Topics Page No: 503 to 513 Book3 Module 11 File I/O Page No:480 to 501	
Course Outcome: After successfully completing this course, students will be able to: CO1: Describe OOPs concepts CO2: Define and identify the use of input and output stream in C++. CO3: Implement the concept of classes and objects CO4: Use functions and pointers in your C++ program CO5: Describe and use constructors and destructors. CO6: An ability to develop a program using any type of Inheritance. CO7: Demonstrate the use of various OOPs concepts with the help of programs.		
Reference Books:- 1. C++ Programming Language by Bjarne Stroustrup 2. Learning C++ (A Hands On Approach)by Eric Naglet 3. C++ A beginners Guide by Herbert Schildt 4. Let us C++ by– Yashwant Kanitkar 5. Mastering C++by Venugopal, TRavishankar, Rajkumar THM Pub. 6. Thinking in C++ 2ndEdition by Bruce Eckel, Prentice Hall Pub.		

SEMESTER II

NEP-2020: First Year UG Major BCA(Science)

Course Code: BSMAP-123

Course Type: Practical

Course Name: Advanced 'C' Programming and OOPs using CPP Laboratory

Credits allotted:2 credits

Lectures allotted: 60 Lectures

Section A: Advanced 'C' Programming

Sr. No.	Assignment	No of Sessions
1	To demonstrate use of preprocessor directives	1
2	To demonstrate use of pointers	2
3	To demonstrate concept of strings, array of strings	2
4	To demonstrate string operations using pointers	2
5	To demonstrate command line arguments	1
6	To demonstrate structures (using array and functions)	2
7	To demonstrate nested structures and Unions	2
8	To demonstrate use of bitwise operators.	1
9	To demonstrate file handling	2

	Total	15	
--	--------------	-----------	--

Section B: OOP and C++

Sr. No.	Assignment	No of Sessions
1.	Introduction to C++	01
2.	Classes and Objects	02
3.	Constructors	02
4.	Memory Allocation	02
5.	Functions	02
6.	Inheritance	03
7.	Files and Exception Handling	03
	Total = 15	

Course Outcome**After studying this course, student will able to –**

- CO-1: implement C programs using C preprocessor, Pointers, arrays, strings and functions;
- CO-2: exercise on pointers, Structures and Unions with dynamic memory allocation;
- CO-3: solve problems on bit-fields and file handling using command line arguments;
- CO-4: illustrate PL/PgSQL Language structure (Views, Functions, cursors, Triggers);
- CO-5: explain Transaction Properties and serializability with concurrency;
- CO-6: compare Client-server Architectures with encryption techniques for security

SEMESTER II**NEP-2020: First Year UG SEC BCA(Science)****Course Code: BSSEP-121****Course Type: Practical****Course Name: Python Programming Laboratory****Credits allotted: 2 credits****Lectures allotted: 60 Lectures****Python Programming Laboratory**

Sr. No.	Assignment	No of Sessions
1.	Basic Python	02
2.	Python Strings	03
3.	Python Tuple	03
4.	Python Set	03
5.	Python Dictionary	02

6.	Functions in Python	02
	Total 15	

Course Outcome**After studying this course, student will able to –**

- CO1 create a program, Test and Debug the Python Programs;
- CO2 use functions and represent Compound data using Lists, Tuples and Dictionaries;
- CO3 implement Conditionals and Loops for Python Programs;
- CO4 implement functions to perform various operations; CO5 implementation of various applications using Python;
- CO6 design database applications and GUI applications.

SEMESTER II**NEP-2020: First Year UG Minor BCA(Science)****Course Code: BSMIT121****Course Type:****Theory Course Name: Electronic Operating Systems Credits allotted: 2 credits****Lectures allotted: 30 Lectures**

Chapter No	Name of the Chapter	Lectures Assigned
1	Introduction to Electronic Operating Systems (EOS)	4L
2	Process Management	5L
3	Memory Management	4L
4	File Management	4L
5	Input/output (I/O) Management	4L
6	Security and Authorization	4L

MODULE-1 [12L+3T]

	Course Contents	
Unit I	Introduction to Electronic Operating Systems (EOS)	[4L]

	1.1 Overview of EOS 1.2 Types of EOS 1.3 EOS Components 1.4 EOS Functions 1.5 EOS Characteristics	
Unit II	Process Management	[6L]
	2.1 Process Concept 2.2 Process Scheduling 2.3 Process Communication 2.4 Process Synchronization	
Unit III	Memory Management	[5L]
	3.1 Memory Hierarchy 3.2 Memory Allocation 3.3 Memory Protection 3.4 Virtual Memory	
MODULE-2 [12L+3T]		
Unit IV	File Management	[4L]
	4.1 File Concept 4.2 File Organization 4.3 File Allocation 4.4 File Protection	
Unit V	Input/output (I/O) Management	[6L]
	5.1 I/O Devices 5.2 I/O Interfaces 5.3 I/O Management Techniques 5.4 I/O Scheduling	

Unit VI	Security and Authorization	[5L]
	6.1 Security Threats 6.2 Security Measures 6.3 Authorization and Access Control 6.4 Cryptography	
Course Outcome: After successfully completing this course, students will be able to: CO1: Understand the basic concepts of Eos and its importance, Types and Characteristics CO2: Describe process scheduling and synchronization techniques CO3: Describe Memory concepts, memory protection and virtual memory concepts CO4: Explain memory allocation algorithms CO5: Explain file organization and allocation techniques. CO6: Explain I/O management techniques and Solve scheduling algorithms CO7: Understand the concept of security threats ,measures and Explain authorization and access control techniques.		
Reference Books:- 1. C++ Programming Language by Bjarne Stroustrup 2. Learning C++ (A Hands On Approach)by Eric Naglet 3. C++ A beginners Guide by Herbert Schildt 4. Let us C++ by– Yashwant Kanitkar 5. Mastering C++by Venugopal, TRavishankar, Rajkumar THM Pub. 6. Thinking in C++ 2ndEdition by Bruce Eckel, Prentice Hall Pub.		

F. Y. B. C. A. Semester II	
Computer organization	
Course code: BSMIT-122	No. of Credits:
	2
Unit No.	Unit title and Contents
Module 1	
I	Sequential Circuits (9) Difference between combinational and sequential circuits, the Concept of clock and types, synchronous and asynchronous circuits, Latch, S-R-latch, D-latch, S-R, J-K, and D flip-flop their operation and truth tables, race around condition, Master-slave JK flip flop, T flip flop (Timing diagram and truth tables). The basic building block of the counter, Ripple counter, up counter, down counter, Up- Down counter, Concept of modulus counters, Decade counter, Shift registers: SISO, SIPO, PISO, PIPO, Ring counter, Universal 4-bit shift register
2	Semiconductor memory (6) Memory Architecture, Memory parameters (Access time, speed, capacity, cost), Concept of Address Bus, Data Bus, Control Bus, Memory Hierarchy, Types of semiconductor Memories, Data Read/ Write process, Vertical and Horizontal Memory Expansion,
Module 2	
1	Basics of Computer System (9) Basic Computer Organization, CPU block diagram and explanation of each block, CPU organization, Instruction set, Data formats, Instruction format, addressing modes, Pipelining, Concept of Stack & its organization,
2	Memory and I/O organization (6) Memory Organization: Role of Cache memory, Memory mapping, role of virtual memory, paging and segmentation, memory management. I/O organization: need of interface, block diagram of general I/O interface.
Text and Reference Books:	
1.	Advanced Microprocessors by Daniel Tabak II nd edition, McGraw Hill publication.
2.	Digital Logic and Computer Design By -M. Morris Mano Ed-7 Pub-PHI Publication.
3.	Modern Digital Electronics By Jain R.P. Ed-4, Pub- Tata McGraw Hill publication India
4.	Computer Architecture and Organization by P. Chakraborty, Jaico Publishing House.

Course Outcomes (COs): On completion of the course, the students will be able to:
CO1: Study and design simple sequential circuits (construction and operations) using digital techniques.
CO2: Understand concept of Clock and timing diagram in sequential circuits used in digital systems.
CO3: Design and Explain working principles of various sequential circuits used in digital systems.
CO4: Understand and illustrate different types semiconductor memory.
CO5: Understand Memory organization, and need and methods of memory expansion.
CO6: Understand different blocks needed to design digital computer system.
CO7: Understand and illustrate block diagram of central processing unit.
CO8: Understand I/O organization and need of interfacing with general I/O interface.

F. Y. B. C. A. Semester II		
Electronics Lab-2		
Course Code: BSMIP-123	: 02	Number of Credits

Sr. no.	Title of Experiment/ Practical
Total 10 experiments are to be performed by student.	
1	Study of SR and JK flip flops (T and D as modification)
2	Study of RAM and read/write action of RAM (using suitable IC e.g. IC 7489).
3	Study of Diode matrix ROM and read action of ROM.
4	Study of 4-bit UP/DOWN counter
5	Design and verify 4 bit Binary asynchronous counter.
6	Study of Modulo counter using IC 7490. (Mod-2 , Mod-5 and Mod 10)
7	Study of 4-bit Shift register.
8	Study of R-2R Digital to Analog Converter.
9	Study of 3-bit Flash Analog to Digital Converter.
10	Study of BCD to 7-segment Display
11.	Study of Keyboard matrix encoder
12	Study of Thumbwheel and Seven segment display.
13	Study of 4-bit Ring counter and bidirectional register.
14	Study of Four bit ALU.

Course Outcomes (COs): On completion of the course, the students will be able to:	
CO1	Identify different analog and digital electronic circuits.
CO2	Identify different sensors and analyze their response.
CO3	Recognize need of various circuit elements in analogue and digital systems.
CO4	To acquire skills of studying and analyzing the responses of electronic circuits.
CO5	Analyze observations of each experiment based on the aim and objectives of an experiment.
CO6	Evaluate observed outputs with expected theoretical outputs.
CO7	Discuss the need and requirement of electronic equipment in daily life.
CO8	Acquirers the skill of design and build his /her simple circuit ideas

Curricular Course; 2 Credits, 60L (Sem.-I)

CCPEP-121: Physical Education and Sports

Theory and Active Participation

- Introduction to Physical Education and Sports
- Concept of Physical Education, its Definition and Scope.
- Concept of Physical Fitness
- Components of Health Related Physical Fitness
- (Cardio-vascular Endurance, Muscular Strength, Endurance, Flexibility, and Body Composition)
- Components of Skill Related Physical Fitness (Agility, Balance, Co-ordination, Speed, Power, Reaction Time)
- Concept of Health, Wellness, and Health & Hygiene.

Fitness Assessment & Participation in Sports

In order to improve the physical fitness standards of students, they should be given opportunity and facilities to participate in Physical Fitness Activity and a game / sport from the list of Association of Indian Universities, New Delhi (List of events available on website www.aiuweb.org). The choice of game / sports will be according to the facilities available in the college.

Participation in Fitness Activity:

- Every student should participate in Fitness Activity for 12 hours.

Participation in Games and Sports:

- A student will have to select one game/sport from the list of Association of Indian Universities, New Delhi (List of events available on website www.aiuweb.org). The choice of game/sports will be according to the facilities available in the college.

Every student should participate in Games and sports for 12 hours.

Fitness Assessment: Cardiovascular Endurance

- Flexibility
- Muscular Strength Endurance
- Body Composition (No marks)

EVALUATION STRUCTURE:**Table 1**

Course	Type of Assessment	Marks	Mode of Evaluation
COURSE –CCPEP-121 PHYSICAL EDUCATION, SPORTS	Internal Assessment	15	Assignment(15 marks) Project on the selected Sports Event
	External Assessment	35	Participation(10 marks) (24 hrs. of participation in Fitness and elected game/sport). Practical – Fitness Test- 25 marks

To complete first credit of Course – Physical Education, Sports, Teacher will have to **conduct 5 theory lectures** (college may schedule these lectures during first or second semester before fitness assessment) and student will have to attend 5 theory lectures and has to participate in Fitness and selected game / sport for **minimum 24hrs.and submit the assignment.**

- Procedure for fitness tests are given in the guidelines section which also includes Norms Table. Marks to be awarded in accordance with the norms table.

Sr. No.	Component	Test	Marks
1	Cardiovascular Endurance (Any One)	ModifiedQueens College Test or 1. 12 Min. Run Walk	10
2		Sit and Reach Test	05

3	Muscular Strength Endurance	Bent Knee Sit Ups	10
4	Body Composition	Fat Percentage	-----
		Total	25

CONSIDERATIONS AND EXEMPTIONS:

Differently Able Students

Differently able students will be exempted from the course **CCPEP-121 PHYSICAL EDUCATION AND SPORTS** after producing the valid documents. This is not depriving them from the equality of opportunity with other students. The student shall have to submit his/her medical certificate at the time of admission from a Civil Surgeon of respective District Civil Hospital.

Important Note:

- Temporary illness will not give students exemption from the course. If he / she miss any assessment/task he / she will be given opportunity in the ensuing semester.

Exemption

Any Student representing college / institute in the enlisted games of Association of Indian Universities / Indian Olympic Association / State Olympic Association shall be **exempted from mandatory participation in selected game / sport for minimum 24hrs** of first credit of Course

– **CCPEP-121** Physical Education and Sports.

Value Education Course VEC- Sem.-II;

POVET-121: Democracy and Indian Constitution

2 Credit, 30 L

Unit-1: The Concept of Democracy

- A. Meaning – Nature and Definition.
- B. Origin and Development.
- C. Types of Democracy. Direct and Indirect

Unit-2:

- A. Major Feature of Democracy.
- B. Social Democracy.
- C. Demerits of Democracy.

Unit-3: Making of Indian Constitution.

- A. Fundamental Rights in the Indian Constitution.
- B. Basic Structure of the Indian Constitution.

Unit: 4

- A. Fundamental Duties of Citizens
- B. Election Commission of India (Electoral Reforms/ E.V.M./Code of Conduct)

English Reference Books/Text

1. An introduction to Political Theory, Author: Rajiv Bhargava Publication: Pearson.
2. Bryce, Modern Democracies.
3. E. Asirvatham, political Theory.
4. Bharatiya Rajyaghatna va Ghatanatmak prakriya, Author: Tukaram Jadhav Publication: Unique Academy Pune.
5. Introduction to the Constitution of India Author: Dr. Durga

मराठी संदर्भ साधने:

- १) डॉ. बाळ कांबळे, २०१२, भारताची राज्यघटना, राजकारण व कायदा डायमंड प्रकाशन पुणे.
- २) पाटील बी. बी., २०१६, भारतीय शासन आणि राजकारण फडके प्रकाशन कोल्हापूर.
- ३) डॉ. जोती बीडलन, डॉ. देशपांडे. भारतीय संविधानाचा परिचय, निराली प्रकाशन, पुणे.
- ४) प्राचार्य. काने राजकीय सिद्धांत आणि राजकीय विचार, पिंपळापुरे प्रकाशन, नागपूर
- ५) प्रा. प्रमोद तांबे, राज्यशास्त्र परिचय, निराली प्रकाशन, पुणे.
- ६) डॉ. विजय देव, आधुनिक राजकीय विश्लेषण कोश, डायमंड प्रकाशन, पुणे,
- ७) भार्गव राजीव, राजकीय सिद्धांत परिचय, अनुवाद-हेमंत खानझोडे, पीयरसन प्रकाशन.
- ८) ना य. डोळे, राजकीय विचाराचा इतिहास, कॉन्टिनेन्टल प्रकाशन, पुणे.

PROGRAMME OUTCOMES

Political Science undergraduate program was born out of recognition of the increasing significance of cross-disciplinary studies in the social sciences. The program is organized around the combined perspectives and analytical tools of Sociology, Political Science, International Relations, and History.

1. Develop knowledge of theories, concepts, and research methods in humanities and social sciences.
2. Assess how global, national and regional developments affect society.
3. The Political Science degree furnishes the students with a unique multidisciplinary approach in social sciences and prepares them for further academic study and for careers in the public and the private sector.

Video Lecture Links

Unit 1: <https://youtu.be/fJaLKyF8Qhw?si=qhL26a4lYps9UV4C>

Unit 1 and 2 : <https://www.youtube.com/watch?v=DXcJoihea7Y>

Unit 2: <https://www.youtube.com/watch?v=GlyiyEBlpH4>

Unit 3: <https://youtu.be/XCvTZzvzh2E?si=kd4eVMXfTTf-IsAL>

Unit 4: https://drive.google.com/file/d/1v_E9q_5UwgyVXF0BcR35u2LOgYVMgYa7/view

.....

PDEA's

Prof. Ramkrishna More ACS College, Akurdi, Pune 44 (Autonomous)

Internal Examination March-2025 (Term-II)

Class: F.Y. B.C.A.Under AICTE

Marks: 20

Subject Code/Name:

Time: 1 Hour

Date:

Q.1) Multiple Choice Questions/ Fill in the Blanks

[1M X 5 = 5 Marks]

Q.2) State whether the following statements are true or false [1M X 5 = 5 Marks]

Q.3) Answer the following questions.

[1M X 10 = 10 Marks]

Total No of Questions: 4

Seat No:

PDEA's, Prof. Ramkrishna More

Arts Commerce and Science College Akurdi (Autonomous), Pune, 411044

F. Y. B. C.A. Semester End Examination

NEP -2020; CBCS Pattern - 2024

Course Code and Course Name:

Instructions to the Candidate:

1. All questions are compulsory.
2. Figures to right indicate full marks.
3. Use of log table and scientific calculator is allowed.

Time: 2 Hours

Marks: 30

Credits: 02

Q-1] Answer the following

[6 marks]

- | | |
|------|----------|
| i. | [CO----] |
| ii. | [CO----] |
| iii. | [CO----] |
| iv. | [CO----] |
| v. | [CO----] |
| vi. | [CO----] |

Q-1: B] Solve any two of the following

[4 marks]

- | | |
|------|----------|
| i. | [CO----] |
| ii. | [CO----] |
| iii. | [CO----] |

Q-2: A] Answer any two of the following

[6 marks]

- | | |
|------|----------|
| i. | [CO----] |
| ii. | [CO----] |
| iii. | [CO----] |

Q-2: B] Attempt any two of the following

[4 marks]

- | | |
|-----|----------|
| i . | [CO----] |
|-----|----------|

Q-3: A] Answer any two of the following

[6 marks]

- | | |
|------|----------|
| i. | [CO----] |
| ii. | [CO----] |
| iii. | [CO--] |

Q-3:B] Answer any one of the following

[4 marks]

- | | |
|-----|----------|
| i. | [CO----] |
| ii. | [CO----] |

