KARNATAK UNIVERSITY, DHARWAD
ACADEMIC (S&T) SECTION
ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಧಾರವಾಡ
ವಿದ್ಯಾಮಂಡಳ (ಎಸ್&ಟಿ) ವಿಭಾಗ

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'A' Grade 2014

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No.KU/Aca(S&T)/RPH-394A/2021-22/ 954 Date: 30 SEP 2021

ಅಧಿಸೂಚನೆ

ವಿಷಯ: 2021–22ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಎಲ್ಲ ಸ್ನಾತಕ ಕೋರ್ಸಗಳಿಗೆ 1 ಮತ್ತು 2ನೇ ಸೆಮೆಸ್ಟರ್ NEP-2020 ಮಾದರಿಯ ಪಠ್ಯಕ್ರಮವನ್ನು ಅಳವಡಿಸಿರುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: 1. ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿಗಳು(ವಿಶ್ವವಿದ್ಯಾಲಯ 1) ಉನ್ನತ ಶಿಕ್ಷಣ ಇಲಾಖೆ ಇವರ ಆದೇಶ ಸಂಖ್ಯೆ: ಇಡಿ 260 ಯುಎನ್ಇ 2019(ಭಾಗ–1), ದಿ:7.8.2021.
2. ವಿಶೇಷ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ನಿರ್ಣಯ ದಿನಾಂಕ: 19.08.2021
3. ಈ ಕಚೇರಿ ಸುತ್ತೋಲೆ ಸಂ.No. KU/Aca(S&T)/RPH-394A/2021-22/18 ದಿ:21.08.2021.
4. ಸರ್ಕಾರಿ ಆದೇಶ ಸಂಖ್ಯೆ ಇಡಿ 260 ಯುಎನ್ಇ 2019(ಭಾಗ–1), ಬೆಂಗಳೂರು ದಿನಾಂಕ: 15.9.2021.
5. ಎಲ್ಲ ಅಭ್ಯಾಸಸೂಚಿ ಮಂಡಳಿ ಸಭೆಗಳ ನಡವಳಿಗಳು
6. ಎಲ್ಲ ನಿಖಾಯಗಳ ಸಭೆಗಳು ಜರುಗಿದ ದಿನಾಂಕ: 24,25–09–2021.
7. ವಿಶೇಷ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ನಿರ್ಣಯ ಸಂಖ್ಯೆ: 01 ದಿನಾಂಕ: 28.9.2021.
8. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಆದೇಶ ದಿನಾಂಕ: 30.09.2021

ಮೇಲ್ಕಾಣಿಸಿದ ವಿಷಯ ಹಾಗೂ ಉಲ್ಲೇಖಗಳನ್ವಯ ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಆದೇಶದ ಮೇರೆಗೆ, 2021–22ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಅನ್ವಯವಾಗುವಂತೆ, ಎಲ್ಲ B.A./ BPA (Music)/BVA/ BTTM/ BSW/ B.Sc./B.Sc. Pulp & Paper Science/ B.Sc. (H.M)/ BCA/ B.A.S.L.P./ B.Com/ B.Com (CS)/ & BBA ಸ್ನಾತಕ ಕೋರ್ಸಗಳ 1 ಮತ್ತು 2ನೇ ಸೆಮೆಸ್ಟರ್‌ಗಳಿಗೆ NEP-2020 ರಂತೆ ವಿಶೇಷ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ಅನುಮೋದಿತ ಕೋರ್ಸಿನ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲ www.kud.ac.in ದಲ್ಲಿ ಭಿತ್ತರಿಸಲಾಗಿದೆ. ಸದರ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲದಿಂದ ಡೌನಲೋಡ ಮಾಡಿಕೊಳ್ಳಲು ಸೂಚಿಸುತ್ತ ವಿದ್ಯಾರ್ಥಿಗಳ ಹಾಗೂ ಸಂಬಂಧಿಸಿದ ಎಲ್ಲ ಬೋಧಕರ ಗಮನಕ್ಕೆ ತಂದು ಅದರಂತೆ ಕಾರ್ಯಪ್ರವೃತ್ತರಾಗಲು ಕವಿವಿ ಅಧೀನದ/ಸಂಲಗ್ನ ಮಹಾವಿದ್ಯಾಲಯಗಳ ಪ್ರಾಚಾರ್ಯರುಗಳಿಗೆ ಸೂಚಿಸಲಾಗಿದೆ.

ಅಡಕ: ಮೇಲಿನಂತೆ

30/09/21
(ಡಾ. ಹನುಮಂತಪ್ಪ ಕೆ.ಟಿ.)
ಕುಲಸಚಿವರು.

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

ಪ್ರತಿ:

1. ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
2. ಕುಲಸಚಿವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
3. ಕುಲಸಚಿವರು (ಮೌಲ್ಯಮಾಪನ) ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
4. ಅಧೀಕ್ಷಕರು, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ / ಗೌಪ್ಯ / ಜಿ.ಎ.ಡಿ. / ವಿದ್ಯಾಂಡಳ (ಪಿ.ಜಿ.ಪಿಎಚ್.ಡಿ) ವಿಭಾಗ, ಸಂಬಂಧಿಸಿದ ಕೋರ್ಸುಗಳ ವಿಭಾಗಗಳು ಪರೀಕ್ಷಾ ವಿಭಾಗ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
5. ನಿರ್ದೇಶಕರು, ಕಾಲೇಜು ಅಭಿವೃದ್ಧಿ / ವಿದ್ಯಾರ್ಥಿ ಕಲ್ಯಾಣ ವಿಭಾಗ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.

KARNATAK UNIVERSITY

DHARWAD

DRAFT REGULATIONS GOVERNING AND SYLLABUS FOR FOUR - YEAR BCA PROGRAMME AS PER NEP-2020 FOR KARNATAK UNIVERSITY, DHARWAD

From 2021-22 and Onwards

Preamble

The education system anywhere in the globe is always evolving in nature and has to keep itself abreast with the changing complex environmental conditions. The pace of adaptability ofthe system would determine a Nation's well-being. A vibrant and flexible educational system is asure bet against all odds that a nation could face in the contemporary world. The delayedresponse of the system can take the Nation to medieval days. Against this importance of the need to keep the educational system in vibrancy, the Government of India constituted under the Chairmanship of Great Educationist and Scientist Dr Kasturirangan. The Committee, after an exhaustive examination of the existing educational system and of the need to adapt to the changing condition of Young India aspiring for greater skills and knowledge, produced a voluminous Document known as 'The New Education Policy – 2020."

The NEP-2020 is based on the principle that education must develop not only cognitive capacities - both the 'foundational capacities 'of literacy and numeracy and 'higher-order' cognitive capacities, such as critical thinking and problem solving – but also social, ethical, and emotional capacities and dispositions. In a broader way, NEP envisions an education system rooted in Indian ethos that contributes directly to transforming India, that is Bharat, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower.

The Government of Karnataka, the most forward-looking State and IT Capital of India took the initiative of implementing the New Education Policy (NEP) – 2020 in right earnest. The University Grants Commission UGC), New Delhi directed all States and the respective Central and State Universities to implement the NEP – 2020.

The NEP-2020 envisages a student centric educational system with an opportunity to learn multiple courses and programmes and provides a comparable and globally competitive educational system. It transforms the existing Higher Educational System into creative, innovative and research oriented system. In addition to the traditional and time-tested system of continuing with the 3-year educational programme, the NEP provides an opportunity to the young minds to move up the ladder of knowledge stream by entering into the Honors and Research qualifications. The under-graduate four-year programme create a better avenue for higher-degree study at Master's / Ph.D. level and also demonstrate to prospective employers a

higher capacity for independent learning and research, along with enhanced problem-solving, critical thinking, independent learning and communication.

The Karnatak University, Dharwad, an educational base of North Karnataka and premier State University and NAAC Rated University, has a history of latching all contemporary changes and developments which are student-centric and society-growth oriented. The NEWP-2020 needs the whole-hearted co-operation and support of galaxy of academia and educationist. Hence, the University constituted a Committee under the Chairmanship of incumbent Vice-Chancellor Prof K B Gudasi to frame regulations for all undergraduate programmes under the umbrella of NEP-2020. These Regulations shall be known as Regulations Governing Under-Graduate Programmes under NEP-2020 of Karnatak University, Dharwad.

The Salient Features of the Four Years Under Graduate Programmes

a. It is a Choice Based Credit System under Semester Scheme.

b. The programmes comprise of about 50% Discipline Specific Core Courses as Major subjects, 20% Discipline Specific Core Courses / Multi-Discipline Specific Courses as Minor courses, and remaining 30% Ability Enhancement Compulsory Courses, Skill Enhancement Courses along with Open Elective Courses.

c. The relative importance of Courses of the study is measured in terms of credits.

d. The programme permits horizontal mobility in course selections and vertical growth in the core courses.

e. The students shall take part in value-based activities.

f. The declaration of result is based on Aggregate Percentage of marks obtained and Cumulative Grade Point Average (CGPA) earned.

g. The candidate has an option to exit after TWO, FOUR and SIX semesters of the programme and shall be awarded Certificate, Diploma, and General Degree, respectively with a provision to reenter and complete the degree.

h. There is a provision to transfer the credits earned by the candidate during transfer from one institution to other.

i. The programme permits the consideration of credits earned from SWAYAM and other platforms recognized by the University.

j. The Programme has special provisions for independent learners to earn additional credits from inter / intra disciplinary subjects apart from mandatory credits.

Definitions: In these Regulations, unless the context otherwise requires:

i. "University" means Karnatak University, Dharwad

ii. "College" means the Higher Education Institution affiliated to University.

iii. "Programme" or "Programme of study" means a higher education programme pursued for a degree specified by the Commission under sub-section (3) of section 22 of the University Grants Commission Act, 1956 (3 of 1956).

iv. "Discipline" means faculty *viz.* Arts, Social Science, Science, Commerce, Management, etc.

v. "Course" means subject or papers having specified units which go to comprise a specified programme of study.

vi. "Credit" means the standard methodology of calculating teaching hours of the course per week in the semester system.

vii. "Candidate" means, a person seeking admission or appearing for examination to the Under Graduate Programme.

viii. "Student" means a person admitted to, and pursuing, a specified credit-based course/programme of study in a higher education institution.

ix. "BoS" means Board of Studies in the various courses.

1. TITLE AND COMMENCEMENT

a. These regulations shall be called **"**Regulations Governing Four-Year Undergraduate Programmes as per NEP-2020" for the Karnatak University, Dharwad.

b. These regulations are framed as per section 44(1c) of K.S.U. Act 2000 for introduction of Programmes.

c. As per Section 44(3) of K.S.U. Act 2000, these Regulations shall come into effect from the academic year: 2021-22 after H.E. the Chancellor's assent.

2. UNDER GRADUATE PROGRAMME OFFERED (U. G. Degrees in Honors)

Bachelor of Computers Applications (B.C.A.)

3. SEMESTER SYSTEM, DURATION OF THE PROGRAMMES, REQUIREMENTS AND OPTIONS:

3.1**:** The under graduate degree programmes shall have eight semesters duration unless specified therwise.

3.2: Each academic year shall have two semesters; odd and even semesters.

3.3: Each semester shall have 16 weeks (06 days per week system) with 90 working days (excluding Sundays and other holidays).

3.4: The Programme shall have multiple exit option at the end of TWO/FOUR/SIX semesters (ONE, TWO or THREE academic years respectively) with the award of Certificate, Diploma and General Degree.

3.5: The candidate availing exit option shall reenter the programme at the beginning of any academic year to complete the degree with the prevailing syllabi.

3.6: All candidates shall be awarded Bachelor's degree with Honors on successful completion of EIGHT semesters (FOUR academic years) undergraduate programme.

4. PROGRAMME STRUCTURE

4.1: Programme shall have three components, *Viz*., i) Discipline Specific Core Courses (DSCC) ii) Elective Courses (EC) and iii) Ability Enhancement Courses (AEC), as given in

Annexures-1 (A, B, C, D) (Course means subject / paper).

a) **DSCC:** DSCC are Compulsory Core Courses of the programme.

b) **EC:** Elective Courses shall have three categories, *viz.*, Discipline Specific Core Elective (DSE) Courses, Open Elective Course (OEC) and Dissertation/ Research Project.

i. **DSE**: Elective courses offered under the core discipline of the study are Discipline Specific Core Elective (DSE).

ii. **Open Elective Course (OEC):** An elective course chosen from any other discipline/subject, with an intention to seek exposure beyond core discipline is called Open Elective Course in all the programmes.

The student shall select any one OEC in the given semester, other than his / her DSCC across the discipline from the **Annexure 2**.

iii. **Dissertation / Research Project:** An elective course designed to acquire special /advanced knowledge, such as supplement study / support study to a project work, and a candidate shall study such a course on his / her own, with an advisory support of a teacher / faculty member is called Dissertation / Research project.

c) **Ability Enhancement Courses (AEC):** The Ability Enhancement Courses (AEC) shall be of two kinds: i) Ability Enhancement Compulsory Courses (AECC) and ii) Skill Enhancement Courses (SEC).

i. **Ability Enhancement Compulsory Courses (AECC)**: Environmental Study, Indian Constitution, English and Modern Indian languages (MIL) / Modern European Language Communications (MEL) are AECCs. **(Annexure3).**

Environmental Study and Indian Constitution are mandatory.
A Student shall study Kannada as First Language and any one of MIL/MEL as second language**.** A simple Kannada Syllabus shall be prescribed for non-Kannadigas or those who have not studied Kannada at PUC / 10+2 Level.

P.S.: 1) A deaf/spastic/mentally retarded/visually impaired/learning deficiency student shall be exempted from learning any one of the languages like English or MIL.

2) MIL means the languages mentioned in VIII Schedule of the Constitution of India.

ii. **Skill Enhancement Courses (SEC):** These courses shall be chosen from a pool of courses designed to provide value-based and skill-based knowledge and should contain lab/hands-on training/ fieldwork.

d) **Special provision for independent learners:** Apart from the above mentioned structure of the programme, a student can study any number of courses from Open Elective Courses (OEC) / EC. The student shall have an option to study any number of courses from OEC from SWAYAM or similar platforms recognized by the University.

d. For BCA programme, Board of Studies (BoS) of the respective programmes shall decide the DSCCs.

4.3: Each course shall have two components i) Lecturing (L) and ii) Tutorial (T)/ Practical (P). Tutorial consists of participatory discussions, seminar presentations, desk work, etc. by the students of the respective courses.

P.S: There shall be no tutorial for Practical subjects and the courses having 2 credits.

4.4: **Credit system of the programme:** Each programme shall have **176 credits** as mentioned in the **Annexures-1 (A, B, C & D)**. Credit means the unit by which a course is measured.

a) 1 hour lecture or 1 hour tutorial per week is equal to 1 credit and that of 2 hours practical is equal to 1 credit. Tutorial is not mandatory for all the courses. However, the concerned BoS shall decide the necessity for any Course.

b) Courses with 3 to 6 credits shall be evaluated for 100 marks and courses with less than 3 credits, including practical, shall be evaluated for 50 marks.

5. WORKLOAD FOR TEACHERS

5.1: Each theory session may have up to a maximum of 40 students, extendable to 45 students for BCA programmes.

5.2: For a practical batch, each 14 students shall have one teacher.

5.3: To determine a teacher's work load one hour theory/tutorial/practical class shall be considered equal to one hour work load.

6. ADMISSION PROCEDURE

6.1: **Invitation of Applications:**

a) The University shall issue a notification for admission to various UG Programmes for all odd semesters soon after the announcement of PUC II year / 10+2 results.

b) Admissions shall be purely based on merit cum roster as per the norms of Government of Karnataka issued from time to time.

c) Academic year normally commences in the month of June every year. The exact date for commencement of academic year shall be decided by the University.

d) Affiliated colleges shall admit students for each programme not exceeding the approved intake. Prior approval from the University is mandatory in case the admissions exceed approved limit.

6.2**: ELIGIBILITY:** A candidate who has passed two-year Pre-University Course (PUC) Examination conducted by Pre-University Education Board, Government of Karnataka, or 10+2 Examination conducted by CBSE or equivalent examinations by any Other State or any other recognized Board / Department shall be eligible for admission to First Semester U.G. Programme.

For **B.C.A.** Programme, a candidate with PUC/10+2 Science or Commerce with Mathematics / Business Mathematics / Accountancy / Computer Science or 3-year Diploma with Computer Science / Information Science or 2-year JOC / ITI with Computer Science, shall be eligible.

6.3: **Admission Eligibility for Second and Subsequent Semesters:**

a) All U G. Programmes shall have carryover system up to 6th semester. The admission conditions are:

i. 75% attendance shall be mandatory for each semester and for each course to appear for semester-end examination. Further, 20% attendance shall be condoned for the students participating/involved in Co-curricular/Extra-Curricular activities like NCC/NSS/Sports/Cultural Activities/Study Tours/Field Work/Seminars, etc., with prior permission of the Principal of the College in writing.

ii. Candidates with 75% attendance but failing to appear for semester-end examination shall also be eligible to seek the admission for immediate higher semester.

iii. Mere submission of application by the candidate to appear for examination without 75% attendance shall not be eligible for higher semester.

iv. Candidates not submitting examination application forms but maintaining 75% attendance shall not be eligible for admission to higher semester.

v. If the candidate appears for II semester end examination and discontinued for III semester and wishes to take admission for IV semester in future, such candidates shall not be allowed for IV semester. Such candidate shall again seek admission to III semester as per University schedule. This is also applicable to other odd semesters.

vi. A candidate who does not satisfy the requirement of 75% attendance even in one Course (subject/paper) shall not be permitted to take the University examination of that semester and he/she shall seek re-admission to that Semester in a subsequent year as per University schedule.

vii. **Eligibility for admission to Bachelor's Degree (Honors):** A candidate seeking admission to a Bachelor's degree (Honors) in a specified field of learning shall have passed the relevant three-year bachelor's degree with minimum CGPA of 7.5 is eligible to continue the fourth year undergraduate programme.

viii. A candidate can seek admission to the 7th Semester in any College running Honors Programme subject to the availability of intake capacity of such Major Courses in the College.

ix. There shall be a provision for carryover system from 7th to 8th semester, subject to the fulfillment of 75% attendance in each Course and submitting the examination application form.

6.4: Medium of instruction:

The medium of instruction shall be English as decided by the concerned BoS.However, the candidate can write the examination only in English.

6.5: Change of Programme:

BCA Programme is specific in nature and hence, there shall not be any provision to change the programme.

6.6: Change of subject / DSCC

a) The MIL/MEL subject studied by the Students in I semester shall be the same for all other semesters as per programme structure.

b) The DSCC chosen for I semester for B.A. and B.Sc. shall remain same for all other semesters as per programme structure and hence, there shall not be any provision to change the DSCC.

6.7: Change of College/Transfer

a) Candidate shall be permitted for change of college only for the odd semesters by seeking admission within the stipulated period mentioned in the admission notification with the due consent from both the colleges. There shall not be any provision for transfer/change

of college for even semesters. Further, lower semester examination failure/MPC candidates are not eligible for transfer/change of college within the Karnatak University's affiliated colleges.

b) The same shall be applicable for the candidate seeking transfer from the colleges of other University within or outside the state or country by producing the eligibility certificate issued by Karnatak University with the confirmation of similarity of the programmes with each other. Other conditions shall be same as in 6.7(a).

c) Such transfer of admission shall be within the intake capacity of the respective class/subject of the respective College.

d) The Degree of 3 or 4 years shall be awarded from the University where the candidate has earned a minimum 50% of the credits prescribed for the programme.

7. Examination

7.1: The prescribed courses of 3 to 6 credits shall be evaluated for 100 marks and that of less than 3 credits, including practical, shall be evaluated for 50 marks. The project work /dissertation shall have 6 credits and be evaluated for 100 marks.

7.2: There shall be a continuous assessment of the student. For this purpose, semester examination is divided into two components:

i. Internal assessment - written examinations conducted by the College for 20% of maximum marks allotted for each Course; and

ii. Semester-end written examination conducted by University after 16th week of the commencement of semester for 80% of the maximum marks allotted for each Course.

7.3: **Internal assessment (IA) examinations:**

i. **Theory Papers:** The College shall conduct IA examination for theory subjects in the 8th week for 10% and 12th week for remaining 10% of maximum marks allotted for each Course. Duration of examination shall be 1 hour each.

ii. **Practical:** The College shall conduct IA examination for practical paper in the 14th week for 20% of maximum marks allotted for each Course. Duration of examination shall be 3 hours.

iii. **Project work /dissertation:** The College shall conduct written IA examination for Project work /dissertation in the 14th week for 20% of maximum marks allotted for each Project work /dissertation. Duration of examination shall be 1 hour.

iv. The Course teacher shall display the marks on notice board within 4 days after IA examination and allow the student for verification of IA Booklet if he/she wishes. Grievances shall be solved by the Course teacher and in complicated cases by the Principal/ representative of Principal as per internal mechanism of the College.

v. There shall not be any provision for improvement of IA marks or for remaining absent. However, IA exam shall be conducted for students who remained absent due to participation in the events related to **co curricular / curricular activities** conducted by recognized organizations**.**

vi. The College shall submit the IA marks to the University if student satisfies 75% attendance in the semester and shall be eligible to appear for semester-end examination.

7.4: Semester-end examination:

The semester-end examination, for 80% of maximum marks allotted for each paper, shall be conducted by the University after 16th week of the commencement of the semester. The

University shall conduct the semester-end examination for either odd or even semesters but not both simultaneously, unless otherwise specified.

i. Duration of theory examination shall be 03 hours for 100 marks per Course (including IA marks) having 3 to 6 credits.

ii. Duration of theory examination shall be 1.5 hours for 50 marks Course (including IA marks) having the credits of less than 3.

iii. Duration of practical examination shall be 3 hours for 50 marks Course (including IA marks) having the credits of less than 3.

iv. Each BoS, in consultation with the concerned Faculty, shall decide the pattern of question paper for uniformity for all the core courses and elective courses.

v. Question papers shall be prepared by a team of members of respective Board of Examiners (BoE).

vi. Concerned BoE shall decide the scheme of valuation of both theory and practical courses.

vii. There shall be a single valuation for theory papers from the members of concerned BoE under the supervision of moderator who is in turn under the supervision of Chairman of BoE.

viii. Practical/evaluation of project/dissertation work/Field Work assessment shall be conducted before the commencement of theory examination at the concerned colleges by two examiners; one from the same college as internal examiner and other from other colleges appointed by University as external examiner. There may be two external examiners but not two internal examiners to conduct the examination. A pair of examiners shall conduct practical examinations for two batches per day having a maximum of 12 students in each batch.

7.5: Passing criteria

a) A candidate has to score 40% in each course including the IA marks for passing the course, subject to the condition that:

i. There shall be no minimum marks or separate passing for the IA examination. The candidate has to score minimum 40% in the semester-end examination (Ex. for 100 marks paper; 20 IA + 80 semester-end exam and hence, minimum 32 marks for semester-end exam required). If candidate scores 40% by cumulating marks from IA and semester-end examination but fails to score 40% from the semester-end examination, such candidate shall be declared as fail.

ii. If the course is having both theory and practical, candidate has to pass both theory and practical independently. If the candidate fails in practical and passes in theory examination, such candidate shall reappear for practical examination only and vice versa.

iii. In all cases of failure in particular course, IA marks shall be protected and carried forward; and the candidate need not reappear for IA examinations in such cases.

b) On successful scoring of minimum 40% in all courses, the candidate shall be declared pass in the programme in that semester.

c) On successful scoring of minimum 40% in all courses and all the semesters, the candidate shall be declared pass in the entire programme.

7.6: Percentage and Grading

a. If P is the percentage of marks secured (IA + semester end score) by the candidate in a course(subject) which is rounded off to the nearest integer, the grade point (GP) earned by the candidate in that course will be given as below:

Percentage(%)	Grade(GP)	Percentage(%)	Grade(GP)
40	4.0	71 - 75	7.5
41 – 45	4.5	76 – 80	8.0
46 – 50	5.0	81 – 85	8.5
51 – 55	5.5	86 – 90	9.0
56 – 60	6.0	91 – 95	9.5
61 – 65	6.5	96 – 100	10.0
66 – 70	7.0		

Grade point of less than 4 shall be considered as fail in the course. Hence, GP=0 and for the absent candidate also GP=0.

b. A student's level of competence shall be categorized by grade point (GP), Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) of the programme.

c. Semester Grade Point Average (SGPA): The SGPA is a ratio of sum of the number of Credit grade points scored from all the courses (subject) of given semester to the total credits of such semester in which the candidate studied. (Credit grade points of each course (subject)= Credit x GP)

d. Cumulative Grade Point Average (CGPA): It is calculated as below for 6 semester programme:.

$$CGPA = \frac{\{(Credit_1 * SGPA_1) + (Credit_2 * SGPA_2) + (Credit_3 * SGPA_3) + (Credit_4 * SGPA_4) + (Credit_5 * SGPA_5) + (Credit_6 * SGPA_6)\}}{\text{Total credits of programme (sum of credits of all semesters)}}$$

e. After studying and passing all the credits prescribed for the programme the degree shall be awarded with CGPA score and class distinguishing as second class, first class, and distinction along with grade letter as under.

CGPA of the Programme (UG)	Class Obtained	Grade Letter
9.50 to 10.00	Outstanding	A++
7.00 to 9.49	Distinction	A+
6.00 to 6.99	First Class	A
5.50 to 5.99	Second Class	B+
5.00 to 5.49		B
4.00 to 4.99	Pass	C
Less than 4.00	Fail/Reappear	D

f. 40% of Credits earned on par with the conventional mode of the respective courses if any through SWAYAM and other recognized platforms shall be considered for calculation of SGPA / CGPA.

g. Additional Credits with minimum 4 Grade points in each OEC/SEC earned by the independent learner under the provision of Section 4.1(d) of these Regulations shall be considered for CGPA subject to candidate's consent for inclusion.

h. Nevertheless, such students have to complete the mandatory credits of 48/96/136/176 (as mentioned in Annexure-1 A, B, C and D) with minimum Grade point =4 in each course to declare the result pass.

7.7. CRITERIA FOR AWARD OF DEGREE

On successful scoring of minimum 4 grade points in all courses of the programme, the Certificate/Diploma/Degree/Honors Degree shall be awarded for the candidates.

CLASSIFICATION OF SUCCESSFUL CANDIDATES: CLASSES AND GRADES

The results of successful candidates at the end of II, IV, VI and VIII semesters shall be classified on the basis of aggregate percentage of marks obtained in all the two, four, six or eight semesters and the Aggregate or Cumulative Grade Point Average (CGPA) for award of:

a) Certificate course for completion of first two semesters if the candidate wishes to exit.

b) Diploma course for completion of first four semesters in the programme if the candidate wishes to exit.

c) Bachelors Degree on completion of first six semesters in the programme if the candidate wishes to exit.

d) Bachelor degree with Honors for completion of all the eight semesters of the programme.

e) Nomenclature of the certificate, diploma, and degrees in different programmes is mentioned in Annexure-6.

The University shall issue the final grade card (Marks card) consisting of grade points along with marks of all courses successfully completed by the candidate at each stage the candidate wishes to exit with SGPA for all the semesters, CGPA with Grade Letter of the entire programme and Class obtained.

The Degree(General / Honors) shall be awarded in the Annual / Special convocation. The Degree certificate shall consist of CGPA of the programme and Class obtained.

7.8: Recounting, revaluation, challenge valuation, photo copying of answer papers

There shall be provision for recounting of marks, revaluation, challenge valuation and photo copying of answer papers. The University shall invite applications for such purpose immediately after announcing the results for every semester by giving 10 days time to apply for the same online as per the existing ordinance and regulations and process the same accordingly.

7.9: Rank and Gold medals.

The University Ranks and Gold-Medals shall be awarded to both the students of 3-year Degree and 4-year Honor Degree. A 4-year Honors Degree Student shall be considered for the award of Rank and Gold Medal who complete the Honors Degree without a break. A Student who exits at the end of 3-year and re-enters into the Honors Degree shall not be considered. The Students who complete a 3-year Degree without break in the examination including lateral entry from other college and does not continue the education anywhere in India shall be considered for the award of medals and ranks. However, this is not applicable for the award of classes like,

second/first class/ distinction to the students. Further, there shall not be any provision for Rank and gold medal for the certificate and
diploma candidates in the exit option.

7.10: Makeup Examination.

a) There shall be no immediate makeup examination for all semesters to the courses where candidate failed to score minimum 40% for semester end examination unless specified otherwise as in (c).

b) However, such candidate shall appear for examination during the regular schedule of examination conducted by the University.

c) There shall be a makeup examination for the V and VI semesters (6 semesters Programme) or VII and VIII semesters (8 semesters Programme) immediately after declaring the final semester results of the programme.

8. Provision for improvement of the marks (Grade Point)

Improvement of the marks (Grade Point): There shall be a provision for candidates to reappear for the examination for the concerned course of theory papers only (subject) in which candidate wishes for improvement of his/ her grade point of SGPA in general and CGPA in total of the programme subject to the condition that:

i. The candidate shall be eligible to reappear for improvement of grade points only after successfully passing the programme.

ii. The candidate may opt for the examination for any number of courses (subject / paper) of the programme for improvement of grade point but not more than three times for each course (subject / paper) as per the prevailing syllabus of the examination conducted in the regular schedule of University examinations.

iii. All such provisions are there within 04 years from successful completion of the programme, but not exceeding the period of 08 years of the duration of completion of the programme.

iv. In all such cases grade points are considered if there is a progress in such improvements, otherwise original grade points shall be retained.

v. No such candidates shall be eligible for the award of Rank, Gold Medal, Cash Prize, etc.

9. Duration for completion of the U. G. Programme

There is no minimum duration for completion of the Programme. However, the candidate has to write the examination based on existing syllabi at the time of appearing for examination.

10. REPEAL AND SAVINGS FOR UG PROGRAMMES

All the existing Regulations governing various three / four years Bachelor degree programmes in the disciplines of Arts, Social Sciences, Science, Commerce and Management under semester and non semester schemes or any ordinances or regulations or guidelines issued or adopted earlier by the University in this matter for constituent and affiliated colleges of Karnatak University are hereby repealed.

However, the above Regulations shall continue to be in force for the students who have been admitted to the degree programmes concerned before the enforcement of these new regulations. *Provided that* the said repeal shall not affect the previous operation of the said regulations / ordinances or anything duly done or suffered there under or affect any right, liability or obligation acquired, accrued, or incurred under the said regulations.

11. **Removal of Difficulties**:

If any difficulty arises in giving effect to the provisions of these regulations, the Vice-Chancellor may, by order, make such provisions not inconsistent with the Act, Statutes, Ordinances, or other Regulations, as appears to be necessary or expedient to remove the difficulty. Every order made under this rule shall be subject to ratification by the Appropriate University Authorities.

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KARNATAK UNIVERSITY, DHARWAD

4-Year BCA (Hons.) Program

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SYLLABUS

BCA

[Effective from 2021-22]

DISCIPLINE SPECIFIC CORE COURSE (DSCC) FOR SEM I & II,

OPEN ELECTIVE COURSE (OEC) FOR SEM I & II and

SKILL ENHANCEMENT COURSE (SEC) FOR SEM I

AS PER N E P - 2020

Karnatak University, Dharwad

Four Years Under Graduate Program in BCA.(Hons.) as per NEP-2020

Effective form 2021-22

SEMESTER – I

Course	Paper Code	Paper Title Theory/Practical	Credits	No. of Hrs/ Week Theory/ Practical	Total Hours	Duration of Exam in Hrs Theory/ Practical	Internal Assessment Marks Theory/ Practical	Marks for Final Exam Theory/ Practical	Total Marks
DSCC-1	BCA-1.1	Introduction to Algorithms	4	4	56	3	30	70	100
	BCA-1.2	Algorithms Lab	2	4	52	3	15	35	50
DSCC-2	BCA-1.3	Introduction to Linux	4	4	56	3	30	70	100
	BCA-1.4	Linux Lab	2	4	52	3	15	35	50
OEC-1	BCA-1.5	Statstical Data Analysis using SPSS	3	3	42	3	30	70	100
SEC -1	BCA-1.6	Fundamentals of Digital Logic	2	1T + 2P	33	1.5	15	35	50
AECC -1	BCA-1.7	Kannada – 1	3	4	45	3	30	70	100
AECC - 2	BCA-1.8	MIL/MEL -1	3	4	45	3	30	70	100
	Total		23	30			195	455	650

SEMESTER -II

Course	Paper Code	Paper Title Theory/Practical	Credits	No. of Hrs/ Week Theory/ Practical	Total Hours	Duration of Exam in Hrs Theory/ Practical	Internal Assessment Marks Theory/ Practical	Marks for Final Exam Theory/ Practical	Total Marks
DSCC-4	BCA-2.1	Data Structures	4	4	56	3	30	70	100
	BCA-2.2	Data Structures Lab	2	4	52	3	15	35	50
DSCC-5	BCA-2.3	Discrete Mathematical Structure	4	4	56	3	30	70	100
	BCA-2.4	DMS Lab	2	4	52	3	15	35	50
OEC-2	BCA-2.5	Introduction to Finnacial Accounting using Tally	3	3	42	3	30	70	100
Value Based	BCA-2.6	Health and Wellness/Social & Emotional Learning	2	2	33	1.5	15	35	50
AECC -3	BCA-2.7	Kannada – 2	3	4	45	3	30	70	100
AECC - 4	BCA-2.8	MIL/MEL -2	3	4	45	3	30	70	100
AECC -5	BCA-2.9	Environmental Study	2	2	30	1.5	15	35	50
	Total		25	32			210	490	700

Details of the other Semesters will be given later

Curriculum

Name of the Degree Program : **BCA**
Discipline Core : **Computer Applications**
Total Credits for the Program : **188**
Starting year of implementation : **2021-22**
Program Outcomes:
By the end of the program the students will be able to:

1. To provide young men and women with required knowledge and necessary skills to get rewarding careers into the changing world of information technology.
2. To provide a foundation of computing principles and business practices for effectively using/managing information systems and enterprise software.
3. To specialize in legacy applications, system software or mobile application.
4. Think of new approaches for solving problem in different domains.
5. To caters the needs of managing the business application.
6. Be in a position to develop industrial applications.

Assessment:

Weightage for assessments (in percentage)

Type of Course	Formative Assessment / IA	Summative Assessment
Theory	30	70
Practical	30	70

Curriculum Structure for the Undergraduate Degree Program

BCA

Total Credits for the Program : **188**
Starting year of implementation : **2021-22**
Name of the Degree Program : **BCA**
Discipline/Subject : **Computer Applications**

Program Articulation Matrix:

Semester	Title /Name Ofthe course	Program outcomes that the course addresses(not more than3 per course)	Pre-requisite course(s)	Pedagogy ##	Assessment$
1	Introduction to Algorithms	To provide a foundation of computing principles	--	Seminar	IA
	Introduction to Linux	To specialize in legacy applications, system software or mobile application.	--	Seminar	IA
2	Data Structures	Think of new approaches for solving problem in different domains.	--	Seminar	IA
	Discrete Mathematical Structure	1. To provide a foundation of computing principles. 2. Think of new approaches for solving problem in different domains.	--	Seminar	IA
3					
4					
5					
6					
7.					
8					
9.					
10					

#

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).

BCA

BCA Semester 1

Course Title: BCA-1.1 (**DSCC-1): INTRODUCTION TO ALGORITHMS**	
Total Contact Hours: 56 + 52	Course Credits: 4+2
Formative Assessment Marks: 30 + 15	Duration of ESA/Exam: 3
Model Syllabus Authors:	Summative Assessment Marks: 70 +35

Course Pre-requisite(s): --

Course Outcomes (COs):

1. Familiarize with fundamental concepts and computer programming.
2. Learn fundamental concepts of programming by developing and executing programs in C.
3. Focuses on the structured program.
4. Various constructs and their syntax.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9	10	11	12
1		X										
2		X										
3				X								
4		X										
5												
6												
7												
8												

Title of the Course: BCA-1.1 (DSCC-1): INTRODUCTION TO ALGORITHMS

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/semester
4	56	2	52

Content of Theory Course	56 Hrs
Unit –1	14
Basics of Programming- Definition and Characteristics of Computer, Block diagram of Computer, Compiler, Interpreter, Linker, Loader, Algorithm, Flowchart, Testing and Execution. Examples of flow charts and algorithms Largest of three numbers, reversing the digits of an integer, GCD of two integers, generating prime numbers, computing nth Fibonacci numbers, finding Even and Odd numbers. **Programming Tokens:** Keywords, Identifiers, Constants, Variables, Data types, defining symbolic constants, Simple Programs.	
Unit – 2	14
Programming Concepts: Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, shorthand assignment operators, conditional operators and increment and decrement operators, Special operators, Type Conversion in expressions, Operator precedence, Mathematical functions. **Input/output Functions:** Unformatted & formatted I/O functions. **Branching and Looping:** Simple 'if' statement, Nested if Statement, Ladder 'if–else' statement. The 'Switch' statement, GOTO statement. Looping**:** for, while, do-while loop, Nested loops and jumps in loops - break, continue statement**.**	
Unit – 3	14
Arrays, Strings and Functions: Definition, types, initialization, processing an array, passing arrays to functions, Array of Strings. Strings: String constant and variables, Declaration and initialization of string, Input/output of string data, String Handling Functions: strlen, strcat, strcmp, strcpy, strrev. Functions: Definition, types of user defined functions, prototype, Local and global variables, passing parameters, recursion.	
Unit – 4	14
Advanced Algorithms: Introduction, the problem solving aspects, Top-down design, Implementation of Algorithms. Exchanging the values of two variables, Counting, Summation of set of Numbers, Factorial Computation, Generation of Fibonacci Sequence, Array Order Reversal, Array Counting, Finding the Maximum Number in a Set, Removal of Duplicates from an Ordered Array, Partitioning an Array, Finding the k^{th} Smallest Element.	

Text Books

1. Balaguruswamy: Programming in ANSI C, Tata Mc Graw-Hill.
2. Brain W.Karningham and Dennis Ritchie: The C Programming Language, PHI.
3. R.G.Dromey: How to Solve it by Computer, Pearson Education, ISBN 978-81-317-0562-9.

References

1. V. Rajaraman: Fundamentals of Computers, PHI (EEE).
2. Kamthane, Programming with ANSI and Turbo C, Pearson Education, Asia.
3. Herbert Schildt: C. The complete reference, 4th edition.
4. Yeshwant Kanetkar: Let us C, BPB.

Pedagogy : Seminar

Content of Practical Course : BCA-1.2 (DSCC-1): Algorithm Lab

List of Programs (Implement all the programs using C Language)

1. Find the area of a circle and area of a triangle given three sides.
2. Largest of three numbers.
3. Reversing the digits of an integer.
4. GCD of two integers.
5. Generating prime numbers.
6. Computing nth Fibonacci numbers.
7. Finding Even and Odd numbers.
8. Exchanging the values of two variables.
9. Counting: Print number from 100 to 200 which are divisible by 7 and display their sum and count using for loop.
10. Summation of set of Numbers.
11. Factorial Computation.
12. Generation of Fibonacci sequence.
13. Array Order Reversal.
14. Finding the Maximum Number in a Set.
15. Removal of Duplicates from an Ordered Array.
16. Partitioning an Array.
17. Finding the k^{th} Smallest Element.
18. Read N (minimum 5) students marks and find number of students passed and fail depending on the marks.
19. Count the number of vowels, consonants and special characters in a given sentence.
20. To find the addition and subtraction of two matrices using function.

BCA

BCA Semester 1

Course Title: **BCA-1.3 (DSCC-2): INTRODUCTION TO LINUX**	
Total Contact Hours: 56 +52	Course Credits: 4+2
Formative Assessment Marks: 30 + 15	Duration of ESA/Exam: 3
Model Syllabus Authors:	Summative Assessment Marks: 70 +35

Course Pre-requisite(s): --

Course Outcomes (COs):

1. Be familiar with fundamentals of Linux operating system.
2. To learn the concepts of files and file organization.
3. To learn the mechanisms involved in ownership of files and file attributes
4. To gain the knowledge on vi editor and regular expressions
5. To know the techniques of shell programming.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1		X										
2		X										
3			X									
4				X								
5			X									
6												
7												
8												

Title of the Course: BCA-1.3 (DSCC-2): INTRODUCTION TO LINUX

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/semester
4	56	2	52

Content of Theory Course	56 Hrs
Unit –1	14
Introduction to Unix: Brief History, What is Unix?, Unix Components, Using Unix, Commands in Unix, Some Basic Commands, Getting Help, Command Substitution, Giving Multiple Commands, Aliases. **Files and File Organization:** Unix Files, Categories of Files, Hidden Files, File System, Path Names, Home Directory, Directory Commands, File Related Commands, Wild Cards, Displaying the Contents of a File, Printing of Files, Comparing Files.	
Unit – 2	14
File Attributes and Permissions: Ownership of Files, File Attributes, File Command, Changing File Permission, Changing the Owner of a File, Changing the group of a File, Times Associated with a File, umask Command. **Standard I/O, Redirection Pipes and Filters:** Standard I/O, Redirection, Pipe and Pipeline, Filter, tee command, Terminal files, Sample Database, Handling Columns and Fields, sort command, uniq command, tr command.	
Unit – 3	14
The vi Editor: vi Editor, Editing with vi, Moving the Cursor, Editing, Copying and Moving Text, Pattern Searching, Repeating the Last Editor Command, Undoing Commands, Joining Lines, Writing Selected Lines onto a Separate File, Using the Shell from vi, Configuring the vi Environment. **Regular Expressions** : grep Family of Commands and sed : Regular Expressions, grep Family, egrep Command, fgrep Command, Stream Editor-sed.	
Unit – 4	14
Shell Programming : Shell Variables, export Command, .profile File – A Script Run during Starting, The First Shell Script, read Command, Positional Parameters, The $? Variable – Knowing the Exit Status, More about the set Command, exit Command, Branching Control Structures, Loop-Control Structures, continue and break Statements, expr Command, Real Arithmetic in Shell Programs, The here Document (<<), sleep Command, Debugging Scripts, script Command, eval Command, exec Command.	

Text Books

1. M.G.Venkateshmurthy: Introduction to Unix & Shell Programming, Pearson Education.

References

1. John Goerzen: Linux Programming Bible, IDG Books, New Delhi.
2. Sumitabha Das: Your Unix - The Ultimate Guide, TMH.
3. Richard Petersen: The Complete Reference – Linux, McGraw-Hill
4. Yashwant Kanetkar: Unix & Shell programming – BPB

Pedagogy : Seminar

Content of Practical Course : BCA-1.4 (DSCC-2): Linux Lab

1. Study Experiment- UNIX basics
2. Basic Shell Programming (Fibonacci Series generation, Factorial of a given number, Checking for Armstrong number)
3. Designing a Arithmetic calculator
4. Generation of Multiplication table
5. Base Conversion (Decimal to Binary, Binary to Decimal)
6. Finding the information about the Login name and File name.
7. Write a shell script to exchange the contents of two variables.
8. Write a shell script, which accepts three subject marks scored by a student and declare the result.
9. Write a shell script program to find area of a square, rectangle, circle and triangle.
10. Write a shell script to print integer numbers from 1 to 20.
11. Write a shell script to perform arithmetic operation on two number depending on +, -, * and /.
12. Write an interactive shell script to display a menu and perform the following task:
    i. Renaming a file ii. Deleting a file iii. Copying a file iv. Exit
13. Write a shell script which counts the number of lines in a file.
14. Write a shell script to accept three command line arguments and display each one of them.
15. Write a c program to a. Display the PID of parent and PID of child. b. Copy the contents of one file into the other using command line arguments.
16. Write a shell script program to check whether the given file is present in a directory and check what is all the permission given for the owner.
17. Write a shell script program to read 2 filenames and check which 1 is newer and which is older.
18. Write a shell script program to find the number of directory files and ordinary files in the current directory.
19. Write a shell script program to delete zero sized file from current directory.
20. Write a shell script program to calculate Gross salary from basic, DA=20% and HRA=10%.

BCA

BCA Semester 1

Course Title: **BCA-1.5 (OEC-1): STATSTICAL DATA ANALYSIS USING SPSS**	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 30	Duration of ESA/Exam: 3
Model Syllabus Authors:	Summative Assessment Marks: 70

Course Pre-requisite(s): --

Course Outcomes (COs):

1. To develop data handling ability of students.
2. To develop diagrammatic representation of the data.
3. To create awareness of descriptive statistics.
4. To acquire practical skills related to regression analysis.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9	10	11	12
1	X											
2		X										
3			X									
4				X								
5												
6												
7												
8												

Title of the Course:BCA-1.5 (OEC-1): STATSTICAL DATA ANALYSIS USING SPSS	
Number of Theory Credits	**Number of lecture hours/semester**
3	**42**

BCA-1.5 (OEC-1): STATSTICAL DATA ANALYSIS USING SPSS	42 hrs
Unit –1	14
Data handling: open SPSS data file – save – import from other data source – data entry – labeling for dummy numbers - recode in to same variable – recode in to different variable – transpose of data – insert variables and cases – merge variables and cases. **Data handling:** Split – select cases – compute total scores – table looks – Changing column - font style and sizes.	
Unit – 2	14
Diagrammatic representation: Simple Bar diagram – Multiple bar diagram – Sub-divided Bar diagram - Percentage diagram - Pie Diagram – Frequency Table – Histogram – Scatter diagram – Box plot.	
Unit – 3	14
Descriptive Statistics: Mean, Median, Mode, SD- Skewness- Kurtosis. Correlation – Karl Pearson's and Spearman's Rank Correlation, Regression analysis: Simple and Multiple Regression Analysis [Enter and stepwise methods].	

Text Books

1. Clifford E.Lunneborg (2000). Data analysis by resampling: concepts and applications. Dusbury Thomson learning. Australia.
2. Everitt, B.S and Dunn, G (2001). Applied multivariate data analysis. Arnold London.

References

1. Jeremy J. Foster (2001). Data analysis using SPSS for windows. New edition. Versions 8-10. Sage publications. London.
2. Michael S. Louis – Beck (1995). Data analysis an introduction, Series: quantitative applications in the social sciences. Sage. Publications. London.

Pedagogy : Seminar

BCA

BCA Semester 1

Course Title: **BCA-1.6 (SEC – 1): FUNDAMENTALS OF DIGITAL LOGIC**	
Total Contact Hours: 33	Course Credits: 2
Formative Assessment Marks: 15	Duration of ESA/Exam: 3
Model Syllabus Authors:	Summative Assessment Marks: 35

Course Pre-requisite(s): --

Course Outcomes (COs):

1. To teach the basics involved in data representation and digital logic circuit.
2. It includes the general concept in digital logic design.
3. To make better understanding of logic used in combinational circuit design.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9	10	11	12
1		X										
2	X											
3				X								
4												
5												
6												
7												
8												

Course : BCA-1.6 (SEC – 1): FUNDAMENTALS OF DIGITAL LOGIC	
Number of Theory Credits	**Number of lecture hours/semester**
2	**33**

BCA-1.6 (SEC – 1): FUNDAMENTALS OF DIGITAL LOGIC	33 Hrs
Unit –1	11
Number Representation: Positional representation of numbers, decimal, binary, octal, Hexadecimal number systems, general radix system, numbers, conversions, complements, binary codes, Fixed point representation, floating point representation, representation for numeric data , arithmetic with signed unsigned numbers, addition, subtraction. Introduction to array correction and array detection. Introduction to logic circuits-variables and functions, truth tables, logic gates and networks, Boolean algebra, synthesis using AND, OR and NOT gates, NAND and NOR logic networks.	
Unit – 2	11
Optimized implementation of logic functions-karnaugh map, strategy for minimization, minimization of product of sums forms, incompletely specified functions, multiple output circuits, multilevel synthesis, a tabular method for minimization, cubical technique for minimization, practical considerations.	
Unit – 3	11
Combinational logic- design procedures, adders, subtractors, design of arithmetic circuits, multiplexers, demultiplexers, encoders, decoders, code converters, verilog for combinational circuits.	

Text Books

1. Fundamental of digital logic with Verilog Design by Stephen Brown & ZVONKO VRANESIC, Tata McGrawHill.
2. Digital Design by M. Morris Mano, Pearson.

References

1. Computer System Architecture, M. Morris Mano, Third edition, Pearson Eduction.
2. Computer Organization and Architecture, W. Stallings, Pearson Education.

Pedagogy : Seminar

BCA

BCA Semester 1

Title of the Course:

Course : AECC-1: KANNADA-1		**Course : AECC-2: MIL/MEL-1**	
Number of Theory Credits	**Number of lecture hours/semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3		**3**	

Content of Course : BCA-1.7 (AECC-1): KANNADA-1	
Kannada-1 – Syllabus is decided by respective BoS	

Content of Course : BCA-1.8 (AECC-2): MIL/MEL-1	
MIL/MEL-1 – Syllabus is decided by respective BoS	

BCA

BCA Semester 2

Course Title: **BCA-2.1 (DSCC-4): DATA STRUCTURES**	
Total Contact Hours: 56 + 52	Course Credits: 4+2
Formative Assessment Marks: 30 + 15	Duration of ESA/Exam: 3
Model Syllabus Authors:	Summative Assessment Marks: 70 +35

Course Pre-requisite(s): --

Course Outcomes (COs):

1. To impart the basic concepts of data structures and algorithms.
2. To familiar with data structural algorithms such as sorting & searching, stack & queue, linked list and trees.
3. To be familiar with some graph algorithms such as binary tree representation of tree and operations on trees.
4. To understand the basic concepts of tree traversal.
5. How to use basic data structure for program implementation.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	1	2	3	4	5	6	7	8	9	10	11	12
1		X										
2		X										
3				X								
4				X								
5				X								
6												
7												
8												

Title of the Course: BCA-2.1 (DSCC-4): DATA STRUCTURES

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/semester
4	56	2	52

Content of Theory Course : BCA-2.1(DSCC-4): DATA STRUCTURES	56 hrs
Unit –1	14
Introduction to Data Structure: Structure Definition, Initialisation, Array as structure, Array within structure, Union. Understanding pointers, Declaring and initializing pointers, accessing a variable through its pointer, static and dynamic memory allocation. Definition of Data Structure, Classification of Data Structure: Primitive and Non-Primitive, Operations on Data Structure, Review of Array.	
Unit – 2	14
Searching and Sorting: Searching Definition, Searching Techniques: Sequential search, Binary search. Comparison Between sequential and binary searching. Sorting Definition, Sorting Techniques: Bubble sort, Merge sort, Selection sort, Quick sort, Insertion Sort.	
Unit – 3	14
Stack and Queue: Definition of stack, Array Representation of Stack, Linked List Representation of stack, Operation Performed on Stack, Infix, Prefix, Postfix notations, Conversion of arithmetic expressions, Application of stack. Definition of Queue, Array Representation of Queue, Types of Queue: Simple queue, Circular queue, Double ended queue, Priority queue, Operations on all types of queue.	
Unit – 4	14
Linked List: Definition, Representation of linked lists in Memory, Types of linked list: Singly linked list, Doubly linked list and Circular linked list. Operations on linked list: Creation, Insertion, Deletion, Search, Display and Traversing. Advantages and disadvantages of linked list. **Trees:** Definitions, Tree terminology, Binary tree, Complete binary tree. Operations on Binary Trees, Representation of binary tree.	

Text Books

1. Kamthane: Introduction to Data Structure in C. Pearson education 2005.
2. Fundamentals of Data structures in C, 2nd Edition, E.Horowitz, S.Sahni and Susan Anderson-Freed, Universities Press.

References

1. Data Structures using C, A.M.Tanenbaum, Y. Langsam, M.J.Augenstein, Pearson.
2. Data structures and Program Design in C, 2nd edition, R.Kruse, C.L.Tondo and B.Leung, Pearson.
3. Data structures A Programming Approach with C, D.S.Kushwaha and A.K.Misra, PHI.
4. E. Balaguruswamy, Programming in ANSI C, Tata Mc Graw-Hill.

Pedagogy : Seminar

Content of Practical Course 3: BCA-2.2(DSCC-4): Data Structure Lab

Program List (Implement using C Language)

1. Write a Program to create, Initialize and access a pointer variable.
2. Write a Program to Calculate the length of the string using a pointer.
3. Write a Program to swap numbers using pointer.
4. Write a program in C to print all permutations of a given string using pointers.
5. Write a Program to store n students information using structure.
6. Write Program to implement Push, Pop and Traverse operation on STACK.
7. Write Program to convert infix notation to postfix notation.
8. Write Program to convert Infix notation to prefix notation.
9. Write a program to convert Prefix notation to postfix notation.
10. Write Program to perform the operation Insert, Delete and Display on Queue.
11. Write Program to implement Circular queue.
12. Write Program to implement Double ended queue.
13. Write Program to implement Priority queue.
14. Write a Program to search an element using Linear search.
15. Write a Program to sort given Array using Insertion sort technique.
16. Write a Program to sort given Array using Bubble sort technique.
17. Write a Program to sort given Array using Quick sort technique.
18. Write a Program to sort given Array using selection sort technique.
19. Write Program to implement Singly Linked List.
20. Write Program to implement Double Linked List.

BCA

BCA Semester 2

Course Title: **BCA-2.3 (DSCC-5): DISCRETE MATHEMATICAL STRUCTURE**	
Total Contact Hours: 56 + 52	Course Credits: 4+2
Formative Assessment Marks: 30 + 15	Duration of ESA/Exam: 3
Model Syllabus Authors:	Summative Assessment Marks: 70 +35

Course Pre-requisite(s): --

Course Outcomes (COs):

1. Define basic concepts of preposition logic and proofs.
2. Define sets, sequences, sum and summation.
3. Solve problems using counting techniques.
4. Solve problems using advance counting technique.
5. Introduction to induction & recursion and writing algorithms using recursion.
6. Studying the properties of relations.
7. Describe the origin of graph theory, illustrate different types of graphs.
8. Categorize trees.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1		X										
2		X										
3				X								
4				X								
5		X										
6		X										
7				X								
8		X										

Title of the Course: BCA-2.3 (DSCC-5): DISCRETE MATHEMATICAL STRUCTURE

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/semester
4	56	2	52

Content of Theory Course : BCA-2.3 (DSCC-5): Discrete Mathematical Structure	56 hrs
Unit –1	14
The Foundations: Logic and proofs: Propositional Logic, Applications of Propositional Logic, Propositional Equivalences, Predicates and Quantifiers, Nested Quantifiers, Rules of Inference, Introduction to Proofs, Proof Methods and Strategy. **Basic Structures**: Sets, Functions, Sequences, Sums, and Matrices: Sets, Set operations, Functions, Sequences and Summations, matrices.	
Unit – 2	14
Counting: Basics of counting, Pigeonhole principle, Permutation and Combination, Binomial Coefficient and Combinations, Generating Permutation and Combination. **Advanced Counting Techniques**: Applications of Recurrence Relations, Solving Linear Recurrence, Relations, Divide and Conquer Algorithms and Recurrence Relations, Generating functions , Inclusion-Exclusion , Applications of Inclusion-exclusion.	
Unit – 3	14
Induction and Recursion: Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms, Program Corrections. **Relation**: Properties of relation, Composition of relation, Closer operation on relation, Equivalence relation and partition. Operation on relation, Representing relation.	
Unit – 4	14
Graphs: Graphs and Graph models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths , Shortest-Path Problems, Planar Graphs, Graph Coloring. **Trees**: Introduction to Trees , Applications of Trees, Tree traversal , Spinning Trees, Minimum Spanning Trees.	

Text Books

1. Discrete Mathematics and Its Applications, Kenneth H. Rosen: Seventh Edition, 2012.

References

1. Discrete Mathematical Structure , Bernard Kolman, Robert C , Busby, Sharon Ross, 2003.
2. Graph Theory with Applications to Engg and Comp. Sci: Narsingh Deo-PHI 1986.
3. Discrete and Combinatorial Mathematics Ralph P. Grimaldi, B. V . Ramatta, Pearson, Education , 5 Edition.
4. Discrete Mathematical Structures, Trembley and Manobar.

Pedagogy : Seminar

Content of Practical Course : BCA-2.4 (DSCC-5): DMS Lab

Program list (Implement using C Language)

1. Write program to implement universal quantification.
2. Write a program to find sum of arithmetic series.
3. Write a program to find sum of the first 10 terms of the sequence $1/n^2$.
4. Write a Program to find intersection of two sets.
5. Write a Program to find power set of a given set.
6. Write a Program to find Factorial of a number using recursion.
7. Write a Program to find Fibonacci series using recursion.
8. Write a Program to solve Tower of Hanoi problem using recursion.
9. Write a Program to search an element using Binary search technique.
10. Write a Program to sort given Array using Merge sort technique.
11. Write a Program to find the minimum and maximum number in a set of N number using Divide and Conquer method.
12. Write a Program to solve Travelling sales man problem.
13. Write a Program to find the shorted path from the specific vertex to all other vertices(Single Source shorted path)
14. Write Program to Create Binary tree.
15. Write Program to implement In-order, Pre-order and Post- order Traversing on Tree.

BCA

BCA Semester 2

Course Title: **BCA-2.5 (OEC-2): INTRODUCTION TO FINANCIAL ACCOUNTING USING TALLY**	
Total Contact Hours: 42	Course Credits: 3
Formative Assessment Marks: 30	Duration of ESA/Exam: 3
Model Syllabus Authors:	Summative Assessment Marks: 70

Course Pre-requisite(s): --

Course Outcomes (COs):

1. To develop accounting ability of students.
2. To teach the basics involved in creating book of account, ledgers, voucher system.
3. To make better understanding of bank reconciliation statement and trail balance.
4. To explore the basics of stock groups.
5. To study the preparation of final accounts of trading, loss account and balance sheet.
6. To make the better understanding of provisions of companies act.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	X											
2		X										
3		X										
4					X							
5						X						
6					X							
7												
8												

Title of the Course: BCA-2.5 (OEC-2): INTRODUCTION TO FINANCIAL ACCOUNTING USING TALLY	
Number of Theory Credits	**Number of lecture hours/semester**
3	**42**

BCA-2.5 (OEC-2): Introduction To Financial Accounting Using Tally	**42**
Unit –1	14
Introduction: Financial Accounting-definition and Scope, objectives of Financial Accounting, Accounting v/s Book Keeping Terms used in accounting, Users of accounting information and limitations of Financial Accounting. Accounting Concepts, Types of Accounts, Accounting Principles or concepts, mode of Accounting, Rules of Accounting, Double entry system of book keeping. Conceptual Frame work, Accounting Standards in India-concept, objectives, benefits Accounting Policies, Accounting as a measurement discipline, valuation Principles, accounting estimates.	
Unit – 2	14
Recording of transactions Company Creation, Alter, Backup & Restore, Creating book of account, Group, subsidiary Group, Ledgers Voucher system; Accounting Process, Journals, Subsidiary Books, Ledger, Cash Book, Bank Reconciliation Statement, Trial Balance. Depreciation: Meaning, need & importance of depreciation, methods of charging depreciation.(WDV & SLM) Stock Groups : Multiple Stock Groups , Stock Categories , Multiple Stock Categories , Units of Measure, Godowns, Stock Items.	
Unit – 3	14
Preparation of final accounts Preparation of Trading and Profit & Loss Account and Balance Sheet of sole proprietary business Introduction to Company Final Accounts: Important provisions of Companies Act, 1956 in respect of preparation of Final Accounts. Understanding of final accounts of a Company.	

Text Books

1. Fundamentals of Accounting & Financial Analysis: By Anil Chowdhry (Pearson Education)
2. Mastering Tally ERP 9: Basic Accounts, Invoice, Inventory by Asok K. Nadhani(BPB Publication)

References

1. Financial accounting: By Jane Reimers (Pearson Education)
2. Accounting Made Easy By Rajesh Agarwal & R Srinivasan (Tata McGraw –Hill)

Pedagogy : Seminar

BCA

BCA Semester 2

Title of the Course:

Course : BCA 2.6 (Value Based) Health and Wellness/Social & Emotional Learning		**Course : AECC-3: KANNADA-2**	
Number of Theory Credits	**Number of lecture hours/semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3		**3**	

Course : AECC-4: MIL/MEL-2		**Course : AECC-5: Environmental Study**	
Number of Theory Credits	**Number of lecture hours/semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3		**3**	

Content of Course : BCA 2.6 (Value Based): Health and Wellness/Social & Emotional Learning	
Kannada-2 – Syllabus is decided by respective BoS	

Content of Course :BCA-2.7 (AECC-3): KANNADA-2	
Kannada-2 – Syllabus is decided by respective BoS	

Content of Course :BCA-2.8 (AECC-4): MIL/MEL-2	
(MIL/MEL-2 – Syllabus is decided by respective BoS)	

Content of Course : BCA-2.9 (AECC-5): Environmental Study	
AECC-5: ENVIRONMENTAL STUDY : Syllabus is decided by respective BoS	

Faculty of Science & Technology
04 - Year UG Honors programme: 2021-22

GENERAL PATTERN OF THEORY QUESTION PAPER FOR DSCC/ OEC
(70marks for semester end Examination with 3 hrs duration)
Part-A

1. Question number 1-6 carries 2 marks each. Answer any 05 questions : 10 marks

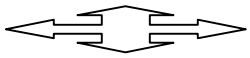
Part-B

2. Question number 7- 14 carries 05Marks each, Answer any 06 questions : 30 marks

Part-C

3. Question number 15-18 carries 10 Marks each, Answer any 03 questions : 30 marks

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

Total: 70 Marks

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