

# Karnatak University, Dharwad



NAAC Accredited with  
"A" Grade-2014

## B.Sc. Programme

### Regulations & Syllabus for

### BACHELOR OF COMPUTER SCIENCE (B.Sc. (CS))

AS DISCIPLINE SPECIFIC COURSE (DSC)  
GENERIC ELECTIVE (GE) and  
SKILL ENHANCEMENT COURSE (SEC)  
UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



Effect from 2020-21 and onwards

**Karnatak University, Dharwad**



NAAC Accredited with  
"A" Grade-2014

## **B.Sc. Programme**

**Syllabus for**

### **PHYSICS (Optional)**

AS DISCIPLINE SPECIFIC COURSE (DSC),  
DISCIPLINE SPECIFIC ELECTIVE (DSE) and  
SKILL ENHANCEMENT COURSE (SEC)  
UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



Effect from 2020-2021

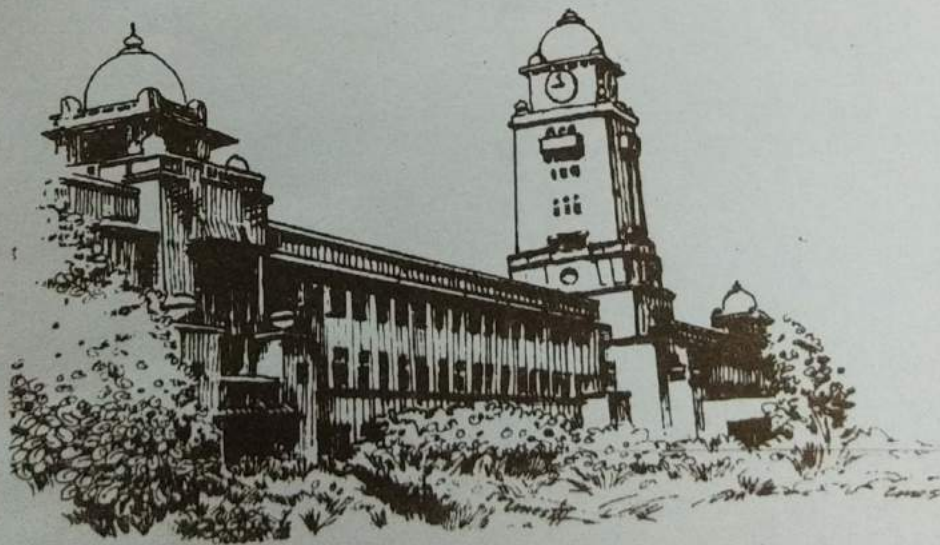
**Karnatak University, Dharwad**



NAAC Accredited with  
"A" Grade-2014

**B.Sc. Programme**  
**Syllabus for**  
**CHEMISTRY (OPTIONAL)**

AS DISCIPLINE SPECIFIC COURSE (DSC)  
and  
SKILL ENHANCEMENT COURSE (SEC)  
UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



Effective from 2020-21

KARNATAK UNIVERSITY, DHARWAD



'A' Grade  
NAAC Accredited 2014

*CBCS SYLLABUS*

*For*

***BACHELOR OF SCIENCE***

**ZOOLOGY**

**(I to IV Semesters)**

**FROM**

**2020-21 & ONWARDS**



**Karnatak University, Dharwad**



NAAC Accredited with  
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**Syllabus and Structure**  
**For**  
**B.Sc. Botany**  
**(I-VI SEMESTER)**

UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



With Effect from 2020-21 onwards

**Karnatak University, Dharwad**



NAAC Accredited with  
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**B.Sc. Degree Course**  
**Proposed Syllabus for**  
**MATHEMATICS**

UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



With effect from 2020-21 and onwards

**Karnatak University, Dharwad**



NAAC Accredited with  
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**B.A. Programme**  
**Syllabus for**  
**GEOGRAPHY (OPTIONAL)**

AS DISCIPLINE SPECIFIC COURSE (DSC)  
and  
SKILL ENHANCEMENT COURSE (SEC)  
UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



	PH CP2.6	<b>Practical- IV</b> Atomic & Molecular and Nuclear & Particle Physics (General)						
	<b>Compulsory Course:</b>							
	PH CT3.1	Quantum Mechanics-II	4	4	3	75	25	100
	<b>Specialization Courses:</b>							
III	PH ST3.2	Electronics-I/ Condensed Matter Physics-I/ Atomic & Molecular Physics-I/ Nuclear & Particle Physics-I	4	4	3	75	25	100
	PH ST3.3	Electronics-II/ Condensed Matter Physics-II/ Atomic & Molecular Physics-II/ Nuclear & Particle Physics-II	4	4	3	75	25	100
	PH ET3.4	<b>Open Elective Course:</b> a. Instrumental Methods OR b. Physics of Nanomaterials	4	4	3	75	25	100
	PH SP3.5	<b>Practical</b> Electronics-I/ Condensed Matter Physics-I/ Atomic & Molecular Physics-I/ Nuclear & Particle Physics-I	4	4	4	75	25	100
	PH SP3.6	<b>Practical</b> Electronics-II/ Condensed Matter Physics-II/ Atomic & Molecular Physics-II/ Nuclear & Particle Physics-II	4	4	4	75	25	100
		<b>Compulsory Courses:</b>						
IV	PH CT4.1	Classical Electrodynamics	4	4	3	75	25	100



Extra-Curricular activities such as sports, literary and cultural activities are also conducted under the auspices of this club.

### 8.6 Special Encouragement:

Students interested in research activities are encouraged by providing them with an opportunity to work in the research laboratories and USIC under the guidance of the faculty members.

### M.Sc. Course in Physics Choice Based Credit System (CBCS) (2018 Scheme) Teaching and Evaluation Scheme

Sem. No	Course code	Title of the Paper	Credit	Teaching Hrs/week	Duration of Exam. in hours for Theory/ Practical	Ma: M		Total
						Semester -End Exam	IA	
I	<b>Compulsory Courses</b>							
	PH CT1.1	Mathematical Methods in Physical Sciences	4	4	3	75	25	100
	PH CT1.2	Classical Mechanics	4	4	3	75	25	100
	PH CT1.3	Electronics (General)	4	4	3	75	25	100
	PH CT1.4	Condensed Matter Physics (General)	4	4	3	75	25	100
	PH CP1.5	<b>Practical-I</b> Electronics and Condensed Matter Physics (General)	4	4		4	75	100
	PH CP1.6	<b>Practical-II</b> Atomic & Molecular and Nuclear & Particle Physics (General)	4	4	4	75	25	100
II	<b>Compulsory Courses</b>							
	PH CT2.1	Quantum Mechanics-I	4	4	3	75	25	100
	PH CT2.2	Atomic & Molecular Physics (General)	4	4	3	75	25	100
	PH CT2.3	Nuclear & Particle Physics (General)	4	4	3	75	25	100
	PH ET2.4	<b>Open Elective Course:</b> Modern Physics	4	4	3	75	25	100
	PH CP2.5	<b>Practical-III</b> Electronics and Condensed Matter Physics (General)	4	4	4	75	25	100

**6. Maximum Period for the completion of the M.Sc. Degree programme :**

There shall be carry-over from first to fourth semester. The maximum number of years required by a student to complete the degree is as specified by the University from time to time.

**7. Rules and Award of Degree :**

7.1 The Minimum for a pass in each course shall be 40% (semester-end exam and IA put together). Further, the candidate shall obtain at least 40% of the marks in the semester-end exam and 50% in aggregate when all Courses of four semesters are put together. There shall be no separate minimum for IA.

7.2 **Award of Degree:** Students after successfully completing all the Courses prescribed for all the four semesters by scoring minimum of 50% in aggregate will become eligible for the award of M.Sc. Degree in Physics.

**7.3 Results: Marks and Grading**

Results of candidates are declared based on the marks obtained and grades earned and classes are awarded as per the University rules.

**8. Co-Curricular and Extra Curricular activities :**

**8.1 Co-curricular Activities :**

Seminars, tutorials, problem solving sessions, discussion classes will be conducted periodically. However, these activities do not carry any marks or credits.

**8.2 Computer Laboratory facilities:**

Students are provided with computer facilities for their curricular as well as for their co-curricular studies and internet browsing.

**8.3 Library Facilities:**

The Department has a library with research journals and text/reference books. Students are allowed to borrow on regular basis.

**8.4 Students Counseling :**

Students will be assigned to teachers for counseling regarding their academic and other matters.

**8.5 Epsilon club :**

An association called  $\epsilon$  (epsilon) club exists in the Department for the all round development of the students. Lectures by students, staff and special lectures by eminent scientists are arranged under the auspices of this club.

### 5.1 Examination:

Examinations will be conducted at the end of the each semester as per the University regulations governing PG Courses.

The semester-end examination in each theory course will have a question paper for 3 hours duration and will carry a maximum of 75 marks. The IA tests will be conducted during the semester. The mode of conducting the tests may involve a common time-table for all the courses in that semester.

Each practical course will have an examination, generally, of four hours duration and will carry a maximum of 75 marks in the semester-end exam. A two-hour duration IA for 25 marks is conducted at the end of the semester.

**Project:** A project dissertation should be submitted by each student at the end of IV-semester to become eligible for the examination. The evaluation of the project dissertation carries a maximum of 75 marks. The viva-voce examination carries a maximum of 50 marks and will be in the form of presentation by the student. During this examination, one external examiner and one project supervisor or along with internal examiner will be involved in the evaluation. IA for 25 maximum marks is conducted during the mid semester, either through a test or a seminar. In the case of seminar, an internal examiner along with the project supervisor will be involved in the evaluation.

**5.2 Question Paper Pattern:** Each theory Course paper is organized into I, II, III and IV Units. A question paper comprises two questions as internal choice from each of these four Units, giving a total of eight questions and, a ninth question has four sub-questions drawn from each of the Units with an option to answer any three. The four sub questions may be in the form of a problem / short answer question / question for explanation of a concept. Each question carries 15 marks, giving a total of 75 marks for the question paper. Below is the summary of the Scheme:

### 5.3 Distribution of Marks :

#### a) Theory Course:

	Max Marks
Semester-end Examination	75
Internal assessment (IA)	<u>25</u>
Total:	<u>100</u>

#### b) Practical Course:

	Max Marks
Semester-end Examination	75 (inclusive of 5 marks for journal and 10 marks for viva-voce)
Internal assessment (IA)	<u>25</u>
Total:	<u>100</u>

#### c) Project:

Semester-end Examination	125
(Project Dissertation – 75; Viva-voce – 50)	
Internal assessment (IA)	<u>25</u>
Total:	<u>150</u>

2. **Attendance:** Every student must have at least 75% attendance in each of the Courses (theory, and practicals) in each of the semesters. Shortage of attendance will be dealt with as per the University rules from time to time.

3. **Medium of Instruction:** The medium of Instruction shall be English.

4. **Scheme of Instructions :**

4.1 In each semester there will be FOUR Theory Courses and TWO Practical Courses.

4.2 Each theory course is of FOUR hours of lectures per week. Each practical course is of FOUR contact hours per week. These include seminars, tutorials and discussion classes. Internal Assessment (IA) shall be conducted during the semesters. Each theory and practical Course shall carry 100 marks, out of which 25 marks are for internal assessment (IA). The various components of IA for 25 marks are as follows: Attendance-3 marks, written test(s)/seminars/assignments (minimum two)-22 marks. Total maximum marks are 600 per I-, II- and III-semester and 650 marks in IV-Semester.

4.3 **Project:** Every student has to compulsorily take a Project course. This is in the IV-semester. The Project may be a theoretical or an experimental work in the respective specialization subject. More than one student may be required to work on an assigned project. Project course carries 150 marks, of which 25 is for IA, 50 marks for viva-voce examination with presentation of the work and 75 marks for the evaluation of dissertation, at the semester-end examination.

5. **Scheme of Evaluation:**

Evaluation of each of the courses will have two components: the first being internal assessment (IA) and the second being the semester-end examinations.

For theory and practical courses having a credit award of 4, the total maximum marks shall be 100. Out of the total of 100, 25 marks shall be earmarked for the IA and the remaining 75 marks for the semester-end examination.

For the project, carrying 6 credits, the total maximum marks shall be 150. Out of 150, 25 marks shall be earmarked for the IA and the remaining 125 marks is shared between viva-voce carrying 50 marks and evaluation of dissertation carrying 75 marks for the semester-end examination.

There are two Elective Courses (under OEC), one in II-Semester and one in III-Semester, offered by the Department of Physics for the students of other science Departments.

**Credits:**

A student shall register for 24 credits in I-, II- and III-semester and 26 in IV-Semester and is required to successfully complete 98 credits for the M.Sc. Course in Physics. The credits for each of the theory (compulsory, specialization and elective) courses, and for each of the practical (compulsory and specialization) courses shall be 4. For the semesters I to IV, there shall be 40 credits for the compulsory theory courses and in each of the III- and IV- semesters, there shall be 8 credits for the specialization theory courses. There shall be 4 credits each for the open elective courses(OEC). In the I-, II- and III- semesters, there are two practical courses, each of which carries 4 credits and in the IV semester, however, while one practical course 4 credits, the project carries 6 credits (see Table 1). Students are allotted to specializations in the third semester on the basis of their order of preference

The student shall opt for an elective course (OEC) at the time of admission.

**1. M.Sc. Degree Course:**

**1.1 Duration of the Course:** The M.Sc. Course is of two years duration spread over four semesters each of sixteen weeks duration.

**1.2 Eligibility for Admission:** B.Sc. graduates of this University or of any other University recognized as equivalent there-to with Physics and Mathematics as optional subjects are eligible. The candidate should have obtained at least 45% of marks in optional subjects as well as in aggregate. Relaxation in respect of SC/ST/Cat-I etc. will be applicable as per prevailing rules of the University.

**1.3 Intake :** Total intake to the M.Sc Course in Physics under the jurisdiction of Karnatak University is 259. The intake to the Course at the Department of Physics at Karnatak University, Dharwad, is 69. The Course is also offered at Karnatak Science College (intake, 35), JSS College, Dharwad(intake 60 (30 under KUD quota + 30 under Management quota), Sri Siddeshwar First Grade Govt College, Naragund (15 all under KUD quota), JT Science College, Gadag(intake 30 (15 under KUD quota + 15 under Management quota) and KSS College, Gadag (intake 50 (25 under KUD quota + 25 under Management quota) The Karnatak University reserves the right to vary intake as deemed necessary including admission rules, fee structures and roster as per notification from time to time.

**Karnatak University, Dharwad**  
**Department of Physics and Electronics**

**Preamble:**

The Department of Physics, one of the oldest and major Departments at Karnatak University, was founded in the year 1953. Eminent spectroscopist Dr. N.R.Tawade was the first Head of the Department and its faculty included very distinguished scientists. The Department, at present, has 11 faculty members, 03 teaching assistants and 56 research scholars. The Department has had a tradition of strong teaching program and quality research output. As a result, it has been nationally recognized for excellence in teaching and research programs with major grants from UGC under Special Assistance Program (SAP) and DST under FIST program and for the individual faculty members from UGC, DST, BRNS and IUAC. Under the UGC-SAP Program, the Department is recognized as Centre of Advanced Study at Level-II with a grant of Rs 2.63 cr and the Department is associated with UGC's the Center with Potential for Excellence in a Particular Area(CPEPA) involving other Science Departments as well. While most of the passed-out students have become school and college teachers, allied job holders, a small but significant number of the students have excelled as scientists (some are Bhatnagar awardees), university faculty and vice-chancellors, and likewise some are successful in foreign countries.

**The Course Details:**

The Department offers M.Sc. and M.Phil Courses and Ph.D. Program in Physics. The M.Sc. Program is a two-year Course, spread over four semesters, each of which is sixteen weeks duration. The Course comprises compulsory and specialization Courses and Open Elective Courses. A student admitted to the Course leading to a M. Sc. Degree should necessarily study the compulsory and specialization Courses in Physics, offered in the Department as well as the Open Elective Courses (OEC), in different subject(s), offered by other Departments. The Student has the freedom to choose two Courses during the study under prescribed OECs.

There are 6 compulsory and 8 specialization theory Courses, 7 practical Courses and one Project. Of these, 10 theory Courses and 4 practical Courses are common to all the students studying in I- and II-Semesters. The remaining 4 theory Courses, 3 practical Courses and the Project are specialization-based Courses offered in the III- and IV- semesters. Specialization Courses are offered in the following subjects:

- 1) Atomic & Molecular Physics
- 2) Condensed Matter Physics
- 3) Electronics
- 4) Nuclear & Particle Physics.

**KARNATAK UNIVERSITY, DHARWAD**

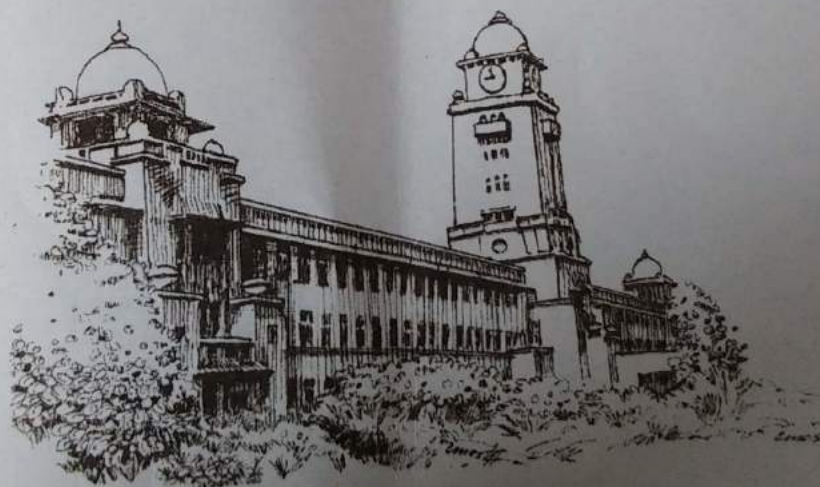


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**P.G. Department of Studies in Physics**

**Syllabus  
for  
PHYSICS**

**Choice Based Credit System (CBCS) (2018 Scheme)**



**With effect from the year 2018 for the I & II Semesters and from the year  
2019 for III & IV Semesters Onwards**

PH CT4.2	Statistical and Thermal Physics	4	4	3	75	25	100
<b>Specialization Courses:</b>							
PH ST4.3	Electronics-III/ Condensed Matter Physics-III/ Atomic & Molecular Physics-III/ Nuclear & Particle Physics-III	4	4	3	75	25	100
PH ST4.4	Electronics-IV/ Condensed Matter Physics-IV/ Atomic & Molecular Physics-IV/ Nuclear & Particle Physics-IV	4	4	3	75	25	100
PH SP4.5	<b>Practical</b> Electronics-III/ Condensed Matter Physics-III/ Atomic & Molecular Physics-III/ Nuclear & Particle Physics-III	4	4	4	75	25	100
PHSPJ4.6	<b>Project:</b> Electronics/ Condensed Matter Physics/ Atomic & Molecular Physics/ Nuclear & Particle Physics	6	6	4	75 (Disserta- tion) + 50(Viva- voce)	25	150

Total No. of Credits, 98

Total No. of Maximum Marks,  
2450



**Karnatak University, Dharwad**



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**Under Graduate Programme (UG)**  
**Under CBCS UG**

**Syllabus for the subject**

**ENGLISH**



# Karnatak University, Dharwad



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## B.Sc. PROGRAMME (General)

UNDER

CHOICE BASED CREDIT SYSTEM (CBCS)

Syllabus for the Subject  
Industrial Fish and Fisheries (IF)



With Effect from 2020-21

**Karnatak University, Dharwad**



NAAC Accredited with  
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## **B.Sc. Programme**

**Syllabus for**

### **ELECTRONICS (Optional)**

AS DISCIPLINE SPECIFIC COURSE (DSC),  
DISCIPLINE SPECIFIC ELECTIVE (DSE) and  
SKILL ENHANCEMENT COURSE (SEC)

UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



Effect from 2020-2021

**Karnatak University, Dharwad**



NAAC Accredited with  
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**Syllabus and Structure  
for  
B.Sc.BIOTECHNOLOGY**

UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



With Effect from 2020-21 onwards

**Karnatak University, Dharwad**



NAAC Accredited with  
"A" Grade-2014

**Syllabus and Structure  
For  
B.Sc. MICROBIOLOGY**

UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



With Effect from 2020-2021 onwards

**Karnatak University, Dharwad**



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# **B.Sc. Programme**

**Syllabus for**

## **GENETICS (OPT.)**

**AS DISCIPLINE SPECIFIC COURSE (DSC)**

**and**

**SKILL ENHANCEMENT COURSE (SEC)**

**UNDER**

**CHOICE BASED CREDIT SYSTEM (CBCS)**



**Effect from 2020-2021**

**Karnatak University, Dharwad**



NAAC Accredited with  
"A" Grade-2014

**B.Sc. Programme**  
**Syllabus for**  
**STATISTICS (OPTIONAL)**

AS DISCIPLINE SPECIFIC COURSE (DSC)  
DISCIPLINE SPECIFIC ELECTIVE (GE) and  
SKILL ENHANCEMENT COURSE (SEC)  
UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



Effect from 2020-2021

**KARNATAK UNIVERSITY, DHARWAD**



'A' Grade  
NAAC Accredited 2014

**SYLLABUS FOR  
B.Sc. GEOLOGY (GENERAL)**

**VI- SEMESTER COURSE  
UNDER CHOICE BASED CREDIT SYSTEM (CBCS)**



**2020-21 Onwards**



**Karnatak University, Dharwad**



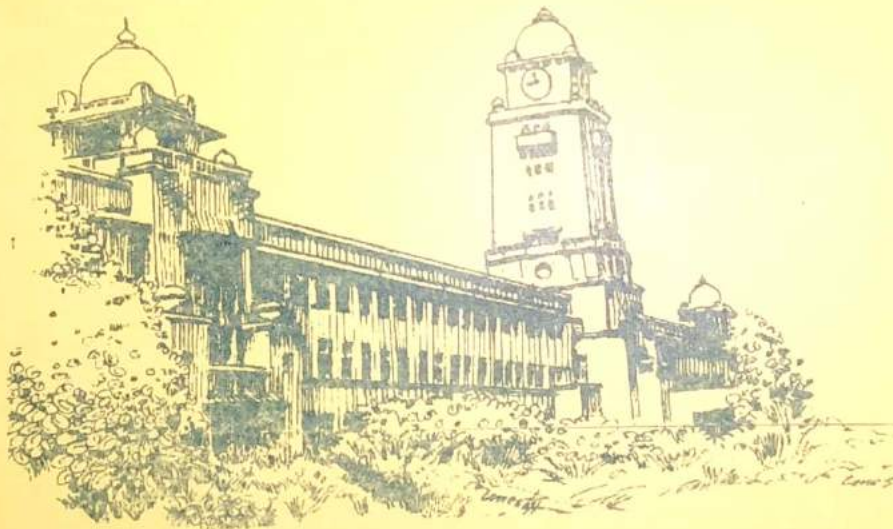
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**B.A. Programme**

**Syllabus for**

**CRIMINOLOGY AND FORENSIC SCIENCE**

AS DISCIPLINE SPECIFIC COURSE (DSC)  
and  
SKILL ENHANCEMENT COURSE (SEC)  
UNDER  
CHOICE BASED CREDIT SYSTEM (CBCS)



Effect from 2020-21



NAAC Accredited with  
"A" Grade-2014

# ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಧಾರವಾಡ

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