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REGULATIONS

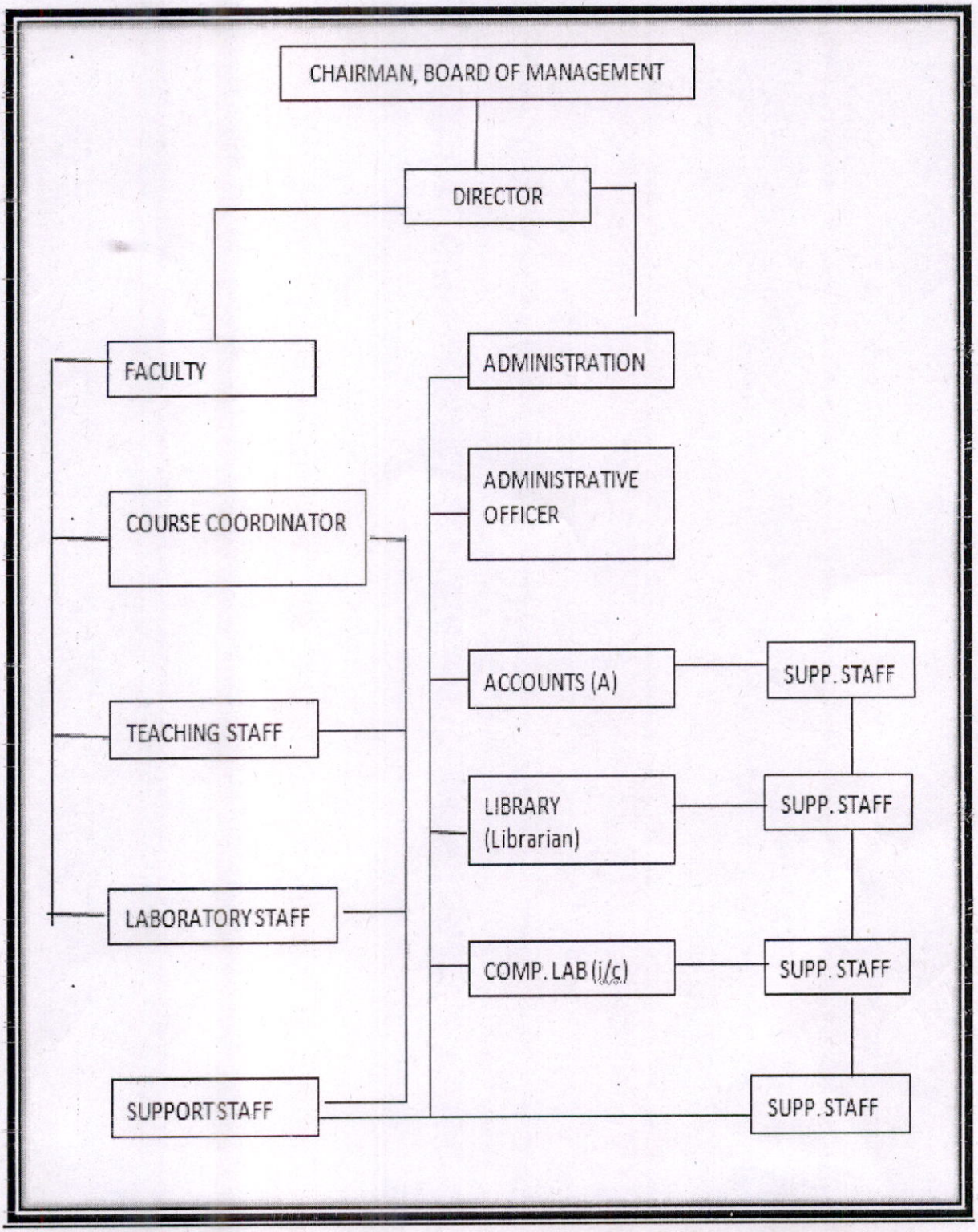
M.Sc. COURSE IN BIOTECHNOLOGY

CENTRE FOR BIOTECHNOLOGY
KOLHAN UNIVERSITY
CHAIBASA-833201
JHARKHAND

DEAN 16/09/2014
FACULTY OF SCIENCE
KOLHAN UNIVERSITY
CHAIBASA

JOINT COLLABORATION OF
FACULTY OF SCIENCE, K.U.
&
TATA COLLEGE, CHAIBASA

ORGANISATIONAL STRUCTURE



Introduction:

Biology has long been engaged in commercializing for the benefit of mankind. During the last few decades Bio-technology has gained momentum in understanding the physiology of human beings, animals and plants. Appreciating its importance in agriculture, environmental science, pharmacology, pharmacognosy, medicine, veterinary, biochemistry, molecular biology, microbial genetics, dairy industries and industrial chemistry, the study of Bio-technology has been one of the prime considerations of the UGC and it has got special mention in **NEP 2020**.

Aims and Objectives:

Visualizing the immense significance of biotechnology, Kolhan University, Chaibasa decided to introduce M.Sc. course in biotechnology under self finance scheme in Vocational mode from the academic session 2021-23 with a view to enhance skilled human resource base and to generate potential for employment opportunities to the future generation in the interest of economic growth of the nation.

Faculty:

An efficient set of teachers of University Departments *i.e.,* Botany and Zoology, Chemistry, Physics, Mathematics/Statistics of Kolhan University, other institutions/national laboratories, Medical colleges are available to cope with various dimension of biotechnology, for smooth running of the course. There will be a Director, who will be responsible for the academic matters of the institute.

DURATION (TIME FRAME)

1. The PG programme for a regular student shall be for a period of two years comprising of 4 semesters to be completed in a maximum of '**Four Years**' period from the date of admission/registration of the candidate.
2. Each academic year shall comprise of two semesters, viz. Odd and Even semesters.
3. Odd Semesters shall be from July to December and the Even Semester shall be from January to June.

IMPLIMENTATION OF CBCS AND GRADING SYSTEM

The Regulation herein specified applies to all full – time Postgraduate Program (Vocational) under Choice Based Credit System by the Kolhan University, Chaibasa as herein after referred to as the University.

ADMISSION:

Intake Capacity:

The total number of seats available for admission to this course will be 40 (Forty) including both general and reserved categories and 10% additional seats for BPL and Girls students. However, there would be five, NRI/PIO in addition to the sanctioned strength.

ELIGIBILITY:

The minimum qualification for appearing at the entrance test is fulfilling any of the following criteria :

a) A graduate with Chemistry, Botany, Zoology having Hons, degree in any of these subjects.
b) A graduate with Hons. degree in Biochemistry/ Biotechnology/ Microbiology/ Industrial microbiology/ Bioinformatics.
c) An M.B.B.S. /B.V.Sc./Phramacy/ Agriculture from a recognized university/ institute established by law.
d) Three Academic Years or passed some other examination recognized by the Academic Council of this University as equivalent thereof (a, b and c).

e) A candidate who has obtained at least 50% marks in aggregate at the graduate level in the subjects mentioned above shall be eligible for appearing at the entrance test of Biotechnology; however this limitation is relax able to 45% for SC/ST/OBC and women candidates.

ENTRANCE TEST:

The Entrance Test will cover written examination of multiple-choice objective type questions carrying 75 marks followed by viva-voce of 25 marks.

The test will cover the disciplines such as Biology, Chemistry, and an elementary knowledge of computer. The duration of written test shall be of 90 minutes.

Only those candidates will be called for viva-voce who qualifies at the entrance test.The cut off marks would be decided by the managing committee, based on student's performance.

RESERVATIONS:

Reservations of seats to SC/ST/OBC/EBC/BCW/Women will be as per rules of Jharkhand Government applicable for Kolhan University. In case sufficient number of candidates is not available under reserved category, the vacant seats shall be filled up in the following manner –

a. Against the vacant seats of SC, the ST candidates be admitted
b. Against the vacant seats of ST, the SC candidates if available, be admitted
c. If no candidates of SC and ST are available for admission, the vacant seats be filled up by thestudents belonging to OBC in addition to their quota.
d. If the specific reservation quota for SC/ST/OBC remains unfilled, the admission of general category students be made in order of merit.
e. A weightage of 10% marks shall be given to the employees/wards of employees of the university (Ward would mean – son/ daughter/ husband/ wife/ dependent own brother and sisters) subjects tobe the conditions that it should not exceed 10 per cent of the total seats.
f. A weightage 5% in total marks obtained at the last examination shall be given to all the girls' students. However, the benefit on account of such a weightage in marks shall be restricted to 50% of the total sanctioned seats.
g. NCC cadets holding "C" Certificate be given weightage of 5% marks over the marks obtained at their respective examination, 3% weightage on "B" Certificate in matter of admission and 1% on "A" Certificate in matter of admission.

h. The Scouts & Guide recipient of *Rashtrapati* Award shall be given weightage of 5% marks on total marks obtained in the last examination.
i. A weightage of 2% marks shall be given to trained First Class third stage of Jharkhand State Institutes of Scout and Guide.
j. In additional to the above, 5% of seats may be allotted for outstanding sports person/ NSS (Minimum 240 hours & Special Camp) of all categories who represented the National/ State/ University at the University College/ School level.

Fee Structure per annum:

The fee structure per annum or for two semesters will be as follows: (Except Examination & Registration Fee):

(a) Admission Fee	-	Rs.	2,000/-
(b) Tuition Fee	-	Rs.	12,500/-
(c) Laboratory Charges	-	Rs.	11,500/-
(d) Library Charges	-	Rs.	2,000/-
(e) Miscellaneous Charges	-	Rs.	2,000/-
Total Rs.	-	**Rs.**	**30, 000/-**

In addition to the above annual fees students will have to pay Refundable Caution money of Rs.**1000/-** at the time of admission and each academic year this course.

Duration and Examination:

The M.Sc. Degree course in Biotechnology will be of TwoAcademic Years comprising four (4) semesters and the medium of instruction will be English. Students of other universities admitted to this course have to be registered with Kolhan University, Chaibasa.

DEFINITIONS:
i. **Academic Year**: Two consecutive (one odd + one even) semesters constitute one academic year.
ii. **Academic Calendar:** An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of all PG Programmes,
iii. **Semester**: An academic year comprising 180 working days in the list is divided into two semesters, each semester having at least 90 working days. With six working days in a week this would mean that each semester will have 90 / 6 = 15 teaching/ working weeks. Considering that each teaching day has 5 teaching/ working hours, a teaching week would have 5 x 6 = 30 working /teaching hours and each semester will have 30 x 15 = 450 teaching hours available for each student. In nut shell, each semester will have 14 — 15 weeks of teaching and the remaining time of the semester will be utilized for examinations, evaluation and publication of the result. Each week will impart 30 hours of teaching spread over 6 days.
iv. The odd semester is scheduled from July to December and the even semester from January to June. Each week has a minimum 30 working hours spread over 6 days.
v. Each semester will include – Admission, Course work, Conduct of examination and declaration of result including semester break.

VALIDITY OF REGISTRATION:

a. Validity of a registration for **Regular Master's Degree (Bio-Tech)** will be for maximum for **Four years** from the date of registration.

b. If an examinee fails to obtain minimum marks, he/she will be awarded maximum five (5) marks grace in one paper, only once in complete academic cycle.

c. Grace marks will be awarded in the condition of requirement for the change of status of result *viz*: Not-promoted to Promoted & for Promoted to Pass.

LATERAL ENTRY:

a. There will be lateral entry of the students only in semester III.

b. Provided that

(i) he/she must have cleared all (total) the credits of previous semester,

(ii) the fulfilment of the UGC regulations/norms concerning lateral entry and

(iii) the availability of seat(s) in the programme concerned.

c. The material contain of the syllabus must be equivalent and there should not be variation in syllabus more than 30%.

RANKING

The Merit List and Ranking thereupon shall be prepared only for Regular Examinees, who passed the Examination in single attempt.

BOARD OF STUDIES :

Centre For Biotechnology shall constitute a board of studies, duly approved by the University, to frame the courses. The Director of the Department shall be the Chairman of the board and it will essentially have at least one invited external expert in addition to the faculty members of the Department as per the provisions of the statute. The elective courses shall be framed with the help of the experts to include the recent advances in the subject/field concerned and would focus on the discipline/interdisciplinary specific areas of research.

INTRODUCTION OF CHOICE BASED CREDIT SYSTEM HAVING FOLLOWING OBJECTIVES:

i. To make the course curriculum learner centric.
ii. To encourage inter-disciplinary without disturbing the domain centric knowledge.
iii. To promote mobility of students and help in optimizing learning.
iv. To allow autonomy to the teachers with built in accountability.
v. Continuous evaluation of students to help in optimizing learning.
vi. To introduce transparency in the evaluation system.
vii. To improve employability among students.

Discipline:

Students admitted to this course are supposed to follow the instructions of discipline as laid down by the institute in order to facilitate smooth functioning. Students have to follow the rules and regulations of the college with reference to R U letter No. RU/I/452-509/08 according to the Hon'ble Supreme Court of India orders.If anybody is found ragging in the University, immediate strict action will be taken according to the relevant regulations.

COURSES:

Course has been designed variously under instructions given as Lectures, Tutorials, and Practical (laboratory and field exercises). Usually these components are referred to as L, T, and P components. The credits for each course determine the volume of the course content. where L stands for Lecture session, T stands for Tutorial session consisting participatory discussion/ self study/ desk work/ brief seminar presentations by students and such other novel methods that make a student to absorb and assimilate more effectively the contents delivered in the Lecture classes and P stands for Practice session and it consists of Hands on experience/ Laboratory Experiments/ Field Studies/ Case studies that equip students to acquire the much required skill component.

a) FOUNDATION COURSES (FC):
The Foundation Courses may be of two kinds:
Compulsory Foundation and Elective foundation.
Compulsory Foundation courses are the courses basedupon the content that leads to Knowledge enhancement and are mandatory. ElectiveFoundation courses are value-based and are aimed at man-making education (Ref. UGC Guidelines).

b) CORE COURSES (CC):
There may be Core Courses in every semester. This is the course which is to be compulsorilystudied by a student as a core requirement to complete the requirement of a programme in a said discipline of study. A Core course may be a Soft Core if there is achoice or an option for the candidate to choose a coursefrom a pool of courses from the main discipline / subjectof study or from a sister / related discipline / subject whichsupports the main discipline / subject. In contrast to the phrase Soft Core, a compulsory core course is called a Hard Core Course.

c) Elective Course (EC): This is a course which can bechosen from a pool of papers. It may be:

- Supportive to the discipline of study
- Providing an expanded scope
- Enabling an exposure to some otherdiscipline/domain
- Nurturing students' proficiency/skill.
- Generic Elective Subject (GE): An elective may be"Generic Elective (GE)" focusing on those courseswhich add generic proficiency to the students
- Discipline Centric Course (DC): An elective may alsobe "Discipline Centric (DC)" or may be chosen from anunrelated discipline. It may be called an "OpenElective".
- Skill Enhancement Course (SEC/AE): "Skill

Enhancement (SE)" is leading to adding to theskill/ability enhancement specific to the programme.

IMPORTANT ASPECTS:
* The BOS may add or delete papers in combination of subjects.
* PG Degree Programme for M.Sc.(Bio-Tech)has been designed taking 92 credits for the course of full-time postgraduate programme delivered in Four (04) Semesters; however credits in Vocational courses may vary as per guidelines and need of the subject.

CREDIT:

The term 'credit' refers to the weightage given to a course,usually in terms of the number of instructional hours per week assigned to it. This explains why usually 'credit' is taken to mean credit hours. The credits also determine the volume of course contents and delivery of programme such as lectures tutorials, practical, assignments etc. Credit will mean as per definition:

Credit: Credit stands for following in the context of CBCS.

Term Credit has a connotation of achievement or earning through learning effort.

a. It also implies successful completion of a course of studymeasured in terms of class room instruction hours/weekin the courses being studied in that semester. It also implies learning effort required on the part of the learner.

b. **Credit:** A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit shall mean one hour of teaching (lecture or tutorial) or two hours of laboratory /practicalwork per week in a semester of 15 weeks.

c. **One credit** = 14 Hours of teaching i.e., 14 Credit Hours

d. **One credit** = 28 Hours of Practical work

e. For the purpose of credit determination, instruction is divided into three components:Lectures (L) – Classroom lectures of one-hour duration.Tutorials (T) – Special, elaborate instructions on specific topics (from Lectures) of one-hour duration. Practical (P) – Laboratory or field exercises in whichthe student has to do experiments or other practical workof two-hour duration.

f. Each one of these components is considered as equal to one credit hour. One lecture (L) as well as one Tutorial(T) of one hour a week is considered as one credit,whereas one Practical (P) of two hours a week isconsidered as one credit. The total weightage given to a course in terms of credits will be equal to L + P/T, whereL is the number of one hour Lectures per week, T is the number of one hour Tutorials per week, and P is thenumber of two hours Practical per week. This can bewritten in symbols as:

C = L + P/T Where, C is the credit weightage for a particular course.

g. All courses needed not carry the same weight. The course should define learning objectives and learning outcomes. A Course is designed to comprise lecture/tutorials/ laboratory work/ field work/ project work/ viva/ seminars/ assignments/ presentations etc. or a combination of some of these.

Table No.-1

Course structure for M.Sc. programme with theory and practical papers of all semester.								
SEMESTER - I								
Course Code	Name of Paper	Credit	Hrs./Week	Full Marks	ESUE*	SIA*(For Theory) / Viva-Voce (For Practical)	Pass Marks (External)	Pass Marks (Internal)
FCBTM101	Microbiology	4	3(L)+1(T)	100	70	30	28	12
BTM102	Cell Biology	4	3(L)+1(T)	100	70	30	28	12
BTM103	Biochemistry & Biophysics	4	3(L)+1(T)	100	70	30	28	12
BTM104	Genetics and Molecular Biology	4	3(L)+1(T)	100	70	30	28	12
BTM105	Practical Based on BTM101, BTM102, BTM103 &BTM104	6	12(L)	100	80	20	32	08
SEMESTER - II								
BTM201	Biology of the Immune System	4	3(L)+1(T)	100	70	30	28	12
BTM202	Enzymology & Enzyme Technology	4	3(L)+1(T)	100	70	30	28	12
BTM203	Genetic Engineering	4	3(L)+1(T)	100	70	30	28	12
BTM204	Genomics and Proteomics	4	3(L)+1(T)	100	70	30	28	12
BTM205	Practical Based on BTM201, BTM202, BTM203&BTM204	6	12(L)	100	80	20	32	08
SEMESTER - III								
BTM301	Animal Cell Culture	4	3(L)+1(T)	100	70	30	28	12
BTM302	Bioprocess Engineering & Technology	4	3(L)+1(T)	100	70	30	28	12
BTM303	Plant Biotechnology	4	3(L)+1(T)	100	70	30	28	12
BTM304	Practical Based on BTM301, 302& BTM303	6	12	100	80	20	32	08
BTM305	Project / Dissertation - I	6	12	100	80	20	32	08
SEMESTER - IV								
EBTM401	Environmental Biotechnology	4	3(L)+1(T)	100	70	30	28	12
BTM402	Bioinformatics	4	3(L)+1(T)	100	70	30	28	12
BTM403	Biostatistics	4	3(L)+1(T)	100	70	30	28	12
BTM404	Based on BTM401 & BTM402	6	12	100	70	30	28	12
BTM405	Project / Dissertation - II	6	12	100	80	20	32	8

ATTENDANCE:

Each student has to register a minimum of 75% attendance in both theory and practical classes separately, failing which he/she will not be allowed to appear at the university examination.Attendance is also compulsory in Terminal examinations, Quiz tests and Seminars.

Mode of Payment:

All payment is to be made through demand draft in favor of Director, School of Biotechnology, KOLHAN UNIVERSITY, Chaibasa, payable at Chaibasa.

Pattern of Questions in the University Exams:

Mid Semester Examination (MSE): There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE): There will be two groups of questions. Group A (Question No.1) is compulsory and will have very short answer consisting of ten questions of 1 mark each. Group B will contain descriptive type seven (7)questions of fifteen marks each, out of which any four is to be answered each having 15 marks from the total 60 for four questions.

GRADING:

a. Credit Weighed Marking System: Performance of a student is evaluated in terms of earned credit weighed marking system.

Earned credits are defined as the sum of course credits in which grade points above a certain cut off have been obtained for declaring learner pass in that course.

b. An absolute grading will be followed where the marks are converted directly to the grades based on pre-determined class intervals.

c. A 10-point grading system with the following letter grades (Ref: UGC Guidelines on Adoption of Choice Based Credit System) as given below will be followed:

Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C and F.

Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale .

Table No. 2. Grades and Grade Points Conversion

Class interval of Marks %	Grade Point	Letter Grade	Grade	Conventional Equivalent
90 % and above	10	O	Outstanding	First Class with Distinction
75 to less than 90	9	A+	Excellent	
60 to less than 75	8	A	Very Good	First Class
55 to less than 60	7	B+	Good	Second Class
50 to less than 55	6	B	Above Average	
45 to less than 50	5	C	Average	
Below 45	0	F	Fail	Fail
Absent	0	Ab	Absent	

SYLLABUS :

Syllabus of B.H.U Varanasi, a Central University has been adopted at present with approx. 30% alteration for M.Sc. courses in Bio- Tech of Kolhan University.

Contact Details :

Dr. B. N. Prasad : +91-6203176944
(Dean, Faculty of Science) Email Id: bnprasad377@gmail.com

Dr. S.C. Das : +91-9661874507
(Principal cum D.S.W.) Email Id: tcchaibasa@gmail.com OR kudsw2009@gmail.com

Dr. Vishnu Shankar Sinha : +91-8294046821
(H.O.D., Botany ,Tata College) +91-7909092634
Email Id: vish20nu@gmail.com