Annex-II (B)

BCA Course Structure

As advised by the Dean of UG Studies (DUGS), a meeting of BOS was held on 08.05.2023 to recommend the course structure for BCA program as per National education policy 2020.

The members discussed and approved that the proposed structure for **BACHELOR OF COMPUTER APPLICATION,** as per NEP-2020 be finalized and may be forwarded to Dean (UGS) for necessary approval and implementation from 2023 admission batch for BCA, and is included as Annexure I. Further, the changed eligibility criteria were also approved and is included as Annexure II.

It was also recommended that students having 85% and above marks in +2 Level may be considered for direct admission on the BCA Course.

The meeting ended with a vote of thanks to all present by the HOD, CSE, especially to the external members for sparing their valuable time.

BOS Members:			
Dr. Supratim Biswas HoD (CSE), Chairman	Dr. Sandip Dutta Member	Dr. Vandana Bhattacharya Member	Dr. A.P Krishna Member (DRS)
Dr. S. S Solanki Member & HOD (ECE)	Dr. Sriparna Saha External Member	Dr. J. K Mondal External Member	Dr. V. k Jha Member
Dr. Kr. Rajnish Member	Dr. Itu Snigdh Member	Dr. Akriti Nigam Member	Faculty Representative (BIT Lalpur)
Faculty Representative (BIT Jaipur)	Faculty Representative (BIT Deoghar)	Faculty Representative (BIT Patna)	Faculty Representative (BIT Noida)

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Dr. S. S Solanki Member & HOD (ECE)	*Sriparna Saha* Dr. Sriparna Saha External Member	Dr. J. K Mandal External Member	Dr. V. k Jha Member
Dr. Kr. Rajnish Member	Dr. Itu Snigdh Member	Dr. Akriti Nigam Member	Faculty Representative (BIT Lalpur)
Faculty Representative (BIT Jaipur)	Faculty Representative (BIT Deoghar)	Faculty Representative (BIT Patna)	Faculty Representative (BIT Noida)

M Gmail

Itu Snigdh <itusnigdh@bitmesra.ac.in>

Approval of the BCA Course structure

Dr.Sounak Paul <paul.sounak@bitmesra.ac.in>   Wed, May 10, 2023 at 2:43 PM
To: Itu Snigdh <itusnigdh@bitmesra.ac.in>

Approved.

Thanks & Regards

Sounak Paul
In-Charge, CSE
BIT Deoghar

....

[Quoted text hidden]

Gmail
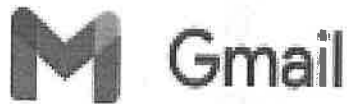
Itu Snigdh <itusnigdh@bitmesra.ac.in>

Approval of the BCA Course structure

Charu Wahi <charu@bitmesra.ac.in>
To: Itu Snigdh <itusnigdh@bitmesra.ac.in>

Wed, May 10, 2023 at 1:42 PM

Dear Mam,

You are kindly requested to consider this email as an approval for the course structure attached.

Thanks & Regards,

Dr. Charu Wahi
Assistant Professor (CSE),
Coordinator (Registration & ERP),
Birla Institute of Technology, Mesra (Deemed University)
NOIDA Off Campus

"BIT Fusion", BIT Noida Campus Newsletter Vol 2 Issue 1

[Quoted text hidden]

M Gmail   **AR (AP) <ar.ap@bitmesra.ac.in>**

Fwd: Documents related to BOS Meeting

1 message

Dean of UGS <dugs@bitmesra.ac.in>   Mon, May 8, 2023 at 2:23 PM

To: "AR (AP)" <ar.ap@bitmesra.ac.in>

---------- Forwarded message ---------
From: **HOD Comp.Sc. & Engineering** <hod.cse@bitmesra.ac.in>
Date: Mon, 8 May 2023 at 1:47 PM
Subject: Fwd: Documents related to BOS Meeting
To: HOD Comp.Sc. & Engineering <hod.cse@bitmesra.ac.in>
Cc: Dean of UGS <dugs@bitmesra.ac.in>, Dean of AAC
<daac@bitmesra.ac.in>, AR (A&AC) <ar.aac@bitmesra.ac.in>

Dear Dr. Vibha Rani Gupta,

This is to request you to include the proposed BCA Course Structure and
eligibility criteria in the ACAP meeting today. The minutes of the meeting
are being circulated for signatures and shall be sent later. The urgency is
in view of the upcoming admissions.

Thanks and regards,

Supratim Biswas

---------- Forwarded message ---------
From: **Itu Snigdh** <itusnigdh@bitmesra.ac.in>
Date: Mon, May 8, 2023 at 12:45 PM
Subject: Documents related to BOS Meeting
To: HOD Comp.Sc. & Engineering <hod.cse@bitmesra.ac.in>

Respected Sir,
Please find the documents for your reference:
1. Minutes of meeting draft
2. Annexure I: Proposed course structure
3. Annexure II: Eligibility criteria
We need to circulate the said documents to all BOS members and obtain signatures from them.

Thanks and Regards,
Itu

--

Dr. Vibha Rani Gupta | डॉ विभा रानी गुप्ता
Dean (UGS) | संकायाध्यक्ष (स्नातक अध्ययन)
Birla Institute of Technology, Mesra | बिरला प्रोद्योगिकी संस्थान, मेसरा
Ranchi 835 215 | रांची ८३५ २१५
INDIA | भारत

2 attachments

Proposed BCA_CourseStructure 8 may 2023.pdf
84K

Eligibility criteria.docx
15K

Annex-II (B)
BCA Course Structure

Eligibility Criteria

S.No.	Program	Campus	Eligibility criteria
1	BCA	Jaipur, Lalpur, Noida, Deoghar and Patna	Candidates must have passed Class 12* / Equivalent Qualifying Examination with minimum 50% (45% for SC/ST/PwD) marks with English and Mathematics / **Biology**/ Computer Science / Information Practice / Information Technology or equivalent subjects in the qualifying examination.

* [The percentage of marks in Class 12 / equivalent qualifying examination shall be considered based on the Board's calculation of percentage for the award of Division / Degree / Certificate].

BIRLA INSTUTURE OF TECHNOLOGY-MESRA, RANCHI
PROPOSED COURSE STRUCTURE FOR
BACHELOR OF COMPUTER APPLICATION as per NEP-2020
(w.e.f. Academic Session 2023-24)

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods/ week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
First Monsoon	FIRST	Pre-requisite course *	PR001	Elementary Mathematics	3	0	0	0
		DSC-Course	CN 101/ CN 103	Programming and Problem Solving using C/ Programming and Problem Solving using C++	3	0	0	3
		DSC-Course	CN 105	Basics of Operating Systems	2	0	0	2
		DSC-Course	CN 107	Fundamentals of Computer Science	2	0	0	2
		MDC		Principle Of Management	3	0	0	3
		VAC		Human Values and Professional Ethics/ Environmental Science	2	0	0	2
				LABORATORIES				
		AECC	MT132	Communication Skills-I	0	0	3	1.5
		DSC Lab	CN 102/ CN 104	C Lab / C++ Lab	0	0	4	2
		SEC-SB		Office Automation Tools/ Linux administration	2	0	2	3
		VAC		Physical Education/Yoga	1	0	2	2
			TOTAL					20.5

*[will be pass course with no credits]

1

Semester/ Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery & credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
Second Spring	FIRST	DSC-Course	CN 121	Introduction to Data Structures	3	1	0	4
		DSC-Course	CN 123	Basics of Digital Computer and Logic Design	3	1	0	4
		MDC		Mathematics for Computing I	3	0	0	3
		VAC		Digital Empowerment /Emotional Intelligence	2	0	0	2
				LABORATORIES				
		AECC	MT133	Communication Skills- II	0	0	3	1.5
		DSC Lab	CN 122	Data Structure Lab	0	0	4	2
		SEC-SB		Introduction to Digital Marketing/Latex	2	0	2	3
		Internship/ Dissertation	CN 125	Internship or work based vocational courses**	0	0	0	4
			Total		23.5Including summer internship			

**Vocational course to be offered during Summer term

EXIT OPTION WITH CERTIFICATIONIN COMPUTER APPLICATIONS
Total Credits I Year [DSC Course:19 MDC:6 SEC-SB:6 VAC:6 AECC:3 Internship:4* = 40+4*] =44

Semester/ Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L- Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods/ week)	T (Periods/ week)	P (Periods /week)	C
				THEORY				
Third Monsoon	SECOND	DSC-Course	CN 201	Java Programming	3	0	0	3
		DSC-Course	CN 203	DBMS	3	0	0	3
		DSC-Course	CN 205	Concept of Programming Language	2	0	0	2
		MDC		Mathematics for Computing II	3	0	0	3
		AECC		Modern Indian Language I/ Public speaking and creative writing	2	0	0	2
				LABORATORIES				
		DSC lab	CN 202	Java Lab	0	0	4	2
		DSC lab	CN 204	DBMS Lab	0	0	4	2
		SEC-SB		Statistics with R/ Computerized Accounting	2	0	2	3
		TOTAL						20

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
		DSC-Course	CN 221	Software Engineering	3	0	0	3
		DSC-Course	CN 223	Python Programming	3	1	0	4
		DSC-Course	CN 225	Computer Networks	3	0	0	3
Fourth Spring	**SECOND**	DSE-Course	CN 227 / CN 229 / CN 231	Introduction to Data Science/Introduction to Artificial Intelligence /ERP	3	0	0	3
		AECC		Modern Indian Language I/Personality Development	3	0	0	3
				LABORATORIES				
		DSC Lab	CN 222	Software Engineering Lab	0	0	4	2
		DSC Lab	CN 224	Python Programming Lab	0	0	4	2
			Total					20

EXIT OPTION WITH DIPLOMAIN IN COMPUTER APPLICATIONS

Total Credits after II Year [DSC+DSE :48 MDC :9 SEC-SB :9 VAC : 6 AECC :8Internship :4* = 80+4*] =84

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
		DSC-Course	CN 301	Fundamentals of Computer Algorithm	3	1	0	4
		DSE-Course	CN 303 /CN 305	Intro to Machine Learning /Computer Graphics	3	0	0	3
		DSC-Course	CN 307	Web Programming	3	0	0	3
		DSC-Course	CN 309	Software Testing	3	1	0	4
Fifth Monsoon	THIRD			LABORATORIES				
		DSE Lab	CN 304/ CN 306	Machine Learning Lab/Computer Graphics Lab	0	0	4	2
		DSC-Course	CN 308	Web Programming Lab	0	0	4	2
		Minor Internship/ Project	CN 312	Internship/Project	0	0	0	2
		TOTAL						20

Semester/ Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
Sixth Spring	THIRD	DSE-Course	CN 331/ CN 333	Advanced Java Programming /Data Analytics	3	1	0	4
		DSC-Course	CN 335	Introduction to Distributed Computing	3	0	0	3
		DSE-Course	CN 337/ CN 339	Introduction to Data Mining/ Introduction to IOT	3	0	0	3
		DSC-Course	CN 341	Computer Oriented Optimization Technique	3	0	0	3
				LABORATORIES				
		DSE Lab	CN 332/ CN 334	Advanced Java Programming Lab/ Data Analytics Lab	0	0	4	2
		DSE Lab	CN 338/ CN 340	Data Mining Lab/IOT Lab	0	0	4	2
			CN 344	Minor Project	0	0	0	3
			TOTAL					20

EXIT OPTION WITH DEGREE (BCA) Total Credits [I Year + II year +III Year = 44+40 +40= 124]

SPECIALIZATION –Artificial Intelligence and Machine Learning / Data Science/ High Performance Computing

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
					L	T	P	
Seventh	Fourth	DSE Course		Annexure A/Annexure B/Annexure C	3	1	0	4
		DSE Course		Annexure A/Annexure B/Annexure C	3	1	0	4
		DSE Course		Annexure A/Annexure B/Annexure C	3	1	0	4
		DSE Course		Annexure A/Annexure B/Annexure C	3	1	0	4
				LABORATORIES				
		DSE Lab		Annexure A/Annexure B/Annexure C	0	0	4	2
		DSE Lab		Annexure A/Annexure B/Annexure C	0	0	4	2
			TOTAL					20

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture; T-Tutorial; P-Practical			Total Credits C-Credits
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
					L	T	P	
Eight	Fourth	DSE Course		Annexure A/Annexure B/Annexure C	3	0	0	3
		DSE Course -C		Annexure A/Annexure B/Annexure C	3	0	0	3
				LABORATORIES				
		DSE Lab		Annexure A/Annexure B/Annexure C	0	0	4	2
		Research Project/Dissertation		Research project /Internship with Viva-voce and seminar presentation.	0	0	0	12
	TOTAL							**20**

AFTER FOURTH YEAR BACHELOR'S DEGREE : BCA   HONOURS in Artificial Intelligence and Machine Learning or BCA   HONOURS in Data Science or BCA   HONOURS in High Performance Computing

Total Credits 164 for 4 years course

Student will select the specialization in one of the Followings :

- **Annexure A - Artificial Intelligence and Machine Learning**
- **Annexure B - Data Science**
- **Annexure C- High Performance Computing**

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ANNEXURE A : Artificial Intelligence and Machine Learning
Courses and Labs to be taken from following table in 7th and 8th semester

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture T-Tutorial P-Practical			Total Credits C
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
					L	**T**	**P**	
	Fourth	DSE Course		Deep Learning	3	1	0	4
		DSE Course		Digital Gaming	3	1	0	4
		DSE Course		Soft Computing	3	1	0	4
		DSE Course		Research Methodology	3	1	0	4
		DSE Course		Natural Language Processing	3	1	0	4
		DSE Course		Data Visualization	3	1	0	4
		DSE Course		Introduction to Artificial Intelligence	3	0	0	3
		DSE Course		Advance Data Analytics	3	0	0	3
		DSE Course		Advanced Python Programming	3	0	0	3
		DSE Course		Computer Vision	3	0	0	3
Seventh/ Eighth		DSE Course		Image Processing	3	0	0	3
		DSE Course		Introduction to Machine Learning	3	1	0	4
		DSE Course		Introduction to Data Science	3	1	0	4
		DSE Courses		Reinforcement Learning	3	0	0	3
		DSE Course		Feature Engineering	3	0	0	3
				LABORATORIES				
		DSE Lab		Deep Learning Lab	0	0	4	2
		DSE Lab		Digital Gaming Lab	0	0	4	2
		DSE Lab		Soft Computing Lab	0	0	4	2
		DSE Lab		Natural Language Processing Lab	0	0	4	2
		DSE Lab		Advanced Python	0	0	4	2

			Programming Lab				
	DSE Lab		Data Visualization	0	0	4	2
	DSE Lab		Advance Data Analytics Lab	0	0	4	2
	DSE Lab		Machine Learning Lab	0	0	4	2
	DSE Lab		Data Science Lab	0	0	4	2
	DSE Lab		Reinforcement Learning Lab	0	0	4	2
	DSE Lab		Feature Engineering Lab	0	0	4	2

ANNEXURE B : Data Science
Courses and Labs to be taken from following table in 7th and 8th semester

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-LectureT-TutorialP-Practical			Total Credits C
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
	Fourth			**THEORY**				
					L	T	P	
		DSE Course		No SQL Data Base	3	1	0	4
		DSE Course		Soft Computing	3	1	0	4
		DSE Course		Data Ethics and Privacy	3	1	0	4
		DSE Course		Research Methodology	3	1	0	4
		DSE Course		Cryptography & Network Security	3	1	0	4
		DSE Course		Cloud Computing	3	1	0	4
		DSE Course		Big Data Analytics	3	0	0	3
Seventh And Eighth		DSE Course		Advance Data Analytics	3	0	0	3
		DSE Course		Advanced Python Programming	3	0	0	3
		DSE Course		Introduction To Machine Learning	3	0	0	3
		DSE Course		Introduction To Data Science	3	0	0	3
		DSE Course		Data Preprocessing and Reporting	3	1	0	4
		DSE Course		Data Security	3	0	0	3
				LABORATORIES				
		DSE Lab		No SQL Lab	0	0	4	2
		DSE Lab		Soft Computing Lab	0	0	4	2
		DSE Lab		Advanced Python	0	0	4	2

			Programming Lab				
	DSE Lab		Advance Data Analytics Lab	0	0	4	2
	DSE Lab		Cloud Computing Lab	0	0	4	2
	DSE Lab		Machine Learning Lab	0	0	4	2
	DSE Lab		Data Science Lab	0	0	4	2
	DSE Lab		Data Preprocessing and reporting Lab	0	0	4	2
	DSE Lab		Data security Lab	0	0	4	2

ANNEXURE C : High Performance Computing
Courses and Labs to be taken from following table in 7th and 8th semester

Semester/Session of Study (Recommended)	Course Level	Category of Course	Course Code	Courses	Mode of delivery and credits L-Lecture T-Tutorial P-Practical			Total Credits C
					L (Periods /week)	T (Periods /week)	P (Periods /week)	C
				THEORY				
					L	T	P	
	Fourth	DSE Course		Advanced Computer Architecture	3	1	0	4
		DSE Course		Massively Parallel Models of Computation	3	1	0	4
		DSE Course		High Performance Cluster Computing	3	0	0	3
		DSE Course		Cloud Computing	3	0	0	3
		DSE Course		Grid Computing	3	0	0	3
Seventh		DSE Course		Introduction to Quantum Computing	3	0	0	3
And		DSE Course		Parallel Algorithm and Computation	3	0	0	3
Eighth		DSE Course		High-Performance Big Data Computing	3	0	0	3
				LABORATORIES				
		DSE Lab		Massively Parallel Models of Computation Lab	0	0	4	2
		DSE Lab		Cluster Computing Lab	0	0	4	2
		DSE Lab		Cloud Computing Lab	0	0	4	2
		DSE Lab		Grid Computing Lab	0	0	4	2
		DSE Lab		Quantum Computing Lab	0	0	4	2
		DSE Lab		Parallel Algorithm Lab	0	0	4	2
		DSE Lab		Big Data Lab	0	0	4	2

Acronyms Expanded

- **AECC**   : Ability Enhancement Compulsory Course
- **DSC**   : Discipline Specific Core (Course)
- **DSE**   : Discipline Specific Elective (Course)
- **VAC**   :Value Added Course
- **SEC-SB**   : Skill Enhancement Course-Skill Based
- **MDC**   : Multidisciplinary Course

Broad Category of Course

Ability Enhancement Compulsory Course(AECC)

Code	Subject	L	T	P	C
MT 132	Communication Skills-1	0	0	3	1.5
MT 133	Communication Skills-2	0	0	3	1.5
	Modern Indian Language I/ Public speaking and creative writing	2	0	0	2
	Modern Indian Language II/Personality Development	3	0	0	3
Total					8

Skill Enhancement Course-Skill Based (SEC-SB)

Code	Subject	L	T	P	C
	Office Automation Tools/Linux administration	2	0	2	3
	Introduction to Digital Marketing/ Latex	2	0	2	3
	Statistics with R/ Computerized Accounting	2	0	2	3
					9

Value Added Courses (VAC)

Code	Subject	L	T	P	C
	Digital Empowerment /Emotional Intelligence	2	0	0	2
	Physical Education/Yoga	1	0	2	2
	Human Values and Professional Ethics/ Environmental Science	2	0	0	2
	Total				6

Multidisciplinary/Interdisciplinary Course (MDC)

Code	Subject	L	T	P	C
	Principle of Management	3	0	0	3
	Mathematics for Computing -I	3	0	0	3
	Mathematics for Computing -II	3	0	0	3
	Total				9

14