

# Bidhan Chandra College, Rishra

## Department of Computer Science

### Programme and Course Outcome

in Computer Science under Choice Based Credit System (CBCS), 2018

<b>Programme offered</b>	<b>B.Sc. Computer Science</b>	
<b>B.Sc. (Hons.) in Computer Science</b>		
<b>Programme Outcome</b>	<b>PO1</b>	The syllabus of the course is at par with the present needs of the I.T. industries. Equal stress is given on theory and practical. There is a 'Project' included in the course which helps the students to get the idea of how the different real life software developments take place.
	<b>PO2</b>	In doing 'Project' students are divided into no. of groups so that they can get the essence of real life software projects where projects are done by a team.
	<b>PO3</b>	After completion of the course the students can pursue higher education such as M.Sc. in Computer Science, PGDCA, MCA, MBA etc.
	<b>PO4</b>	After completion of the course students can get jobs at different leading I.T. companies as well as different public and private sector companies, banks, rail etc.
<b>Semester I</b>		
<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome</b>
CMS-A-CC-1-1-TH	Digital Logic	Students are taught computer fundamentals along with different logic gates, combinational circuits, sequential circuits and integrated circuits
CMS-A-CC-1-1-P	Digital Circuits	Students get hand-on experience on circuit design. They are taught how to design different logic gates, combinational circuits, sequential circuits and integrated circuits
CMS-A-CC-1-2-TH	Programming Fundamentals using C	Students are taught the high level language C. They learn the basics of C programming language such as data types, preprocessors, loops, control statements, functions, arrays, pointers, and user defined data types and file accessing.

CMS-A-CC-1-2-P	Programming in C	Students are given assignments on above topics in C programming language. They solve the assignments using C in the computer lab.
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<b>Semester II</b>		
<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome</b>
CMS-A-CC-2-3-TH	Data Structure	Students are taught different topics of data structure such as arrays, linked list, stacks, queues, trees, recursion, searching and sorting and hashing.
CMS-A-CC-2-3-P	Data Structure using C	Students are given assignments on the topics taught on the theory classes and they solve them using C programming language in the computer lab.
CMS-A-CC-2-4-TH	Basic Electronic Devices and Circuits	Students are taught about different electronic devices and circuits such as diode, bipolar junction transistor, unipolar junction transistor, PNP devices, Optoelectronic materials, OPAMP, Timer and data acquisition.
CMS-A-CC-2-4-P	Basic Electronic Devices and Circuits	Students are given assignments based on above topics and they do them in their hardware lab.
<b>Semester III</b>		
<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome</b>
CMS-A-CC-3-5-TH	Computer Organization & Architecture	Students are taught about Computer Organization and Architecture. Topics covered are Basic structure of computers, Register transfer and micro-operation, Basic computer organization and design, CPU Organization, Control unit, CPU registers, Instructions, RISC and CISC processors, I/O organization, Memory and computer peripherals.
CMS-A-CC-3-5-P	Computer Organization Lab	Students are assigned multiple assignments which include practical problems on the circuits, based on the internal components of central processing unit(CPU). They learn how to implement the circuits in practical in the hardware LAB.

CMS-A-CC-3-6-TH	Computational Mathematics	Students are taught about set theory, probability, numerical methods like interpolation, solving non-linear and differential equations, numerical integrations, curve fittings and Graph theory.
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CMS-A-CC-3-6-P	Computational Mathematics Lab	Students are given assignments on the above topics in C programming language. They solve the assignments using C in the computer lab.
CMS-A-CC-3-7-TH	Operating Systems	Students are taught about different aspects of operating systems such as type of operating systems, shell, kernel, process and its scheduling, CPU scheduling, deadlock, memory, file and I/O management, protection and security.
CMS-A-CC-3-7-P	Operating Systems Lab	Students are taught Linux operating system and assignments on shell programming are given to them and they solve the assignment in computer lab using Linux
CMS-A-SEC-A-3-1-TH	Computer Graphics	Students are taught how computer Graphics works, and Image processing take place inside computers. Syllabus also include several modern state of the art Image Processing Algorithms, that help the students to understand their practicals in the next semesters.

#### Semester IV

Course Code	Course Name	Course Outcome
CMS-A-CC-4-8-TH	Data Communication, Networking and Internet Technology	Syllabus includes detailed discussions on various topics of Networking, Internet and Communications. Students are able to learn how Network works, How Telecommunications Systems and Satellite systems are implemented, and how the whole system of the Internet works.
CMS-A-CC-4-8-P	Computer networking and Web Design	In this Practical Course students learn how to make Websites using HTML. They also learn about different Hardwares used in Computer Networks.

CMS-A-CC-4-9-TH	Introduction to Algorithms & its Application	Algorithm is one of the most important aspect of Computer Science. In this course students are taught about different design approaches and classifications of Algorithms. They also learn how to measure the complexity of Algorithms.
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CMS-A-CC-4-9-P	Algorithms Lab	In this Practical Course students are give multiple assignments base on the problems of Graph Theory. They implement the practicals in the Software LAB.
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CMS-A-CC-4-10-TH	Microprocessor and its Applications	This course includes very detailed discussions on how a Microprocessor works. Mainly we study 8085 Microprocessor by Intel, how the microprocessor works, how it's internal components are connected, how the instructionset works , and how it communicates with the external peripheral devices.
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CMS-A-CC-4-10-P	Programming with Microprocessor 8085	In this practical course students implement solutions of different problems by programming the 8085 Microprocessor in Hardware LAB.
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CMS-A-SEC-B-4-2-TH	E-Commerce	The main focus of the course is to educate students about how commercial transactions are conducted electronically on the Internet. They also learn about different encryption algorithms that are used at the time of secure online transactions.
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### Semester V

Course Code	Course Name	Course Outcome
CMS-A-CC-5-11-TH	Database Management System (DBMS)	Students are taught about different data models, entities, E-R diagrams, file organization, relational algebra, relational calculus, domain calculus, functional dependency, normalization rules and database design, SQL etc.
CMS-A-CC-5-11-P	RDBMS using My SQL & PHP	Students are given assignments on DBMS. They solve the assignments using My SQL and PHP in the computer lab.

CMS-A-CC-5-12-TH	Object Oriented Programming (OOPs)	The main goal of this course is to educate students about most important programming concept, i.e OOP or Object Oriented Programming. They learn about the different properties of OOP like Class, Object, Inheritance, Polymorphism etc. in proper details.
CMS-A-CC-5-12-P	OOPs Lab using JAVA	Students implement different real life problems using OOP concepts in JAVA programming language.

CMS-A-DSE-A-1-TH	Digital Image Processing	In this course students are taught some modern advanced Image processing techniques and algorithms. These tools can be used in future research on Image Processing and also for implementing different Image processing applications.
CMS-A-DSE-A-1-P	Image Processing Lab	Students are given multiple problems on Image processing as assignments. They solve those problems by writing programs in Python using Open CV library.
CMS-A-DSE-B-2-TH	Programming using Python	Python is one the most growing and popular programming language. In this course students are taught the python programming language in great details. They learn about Python List, Tuple, Dictionary etc. Python also has a large library support which can be used for scientific research and as well as application building.
CMS-A-DSE-B-2-P	Programming in Python Lab	Students are given multiple real life problems as assignments. They write programs in Python and solves them.

**Semester VI**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcome</b>
CMS-A-CC-6-13-TH	Software Engineering	Students are taught the different aspects of software engineering such as software development life cycle, requirement specification and analysis, project estimation and costing, coding, designing and testing of a software, software quality assurances etc.

CMS-A-CC-6-14-TH	Theory of Computation	In this course students learn about Finite Automata, Formal Language and Grammar, Regular Expression, etc. Finally they learn about Turing machine and its problem solving abilities.
CMS-A-CC-6-14-P	Project	Students implement application that can solve any real life problem, based on their knowledge. They use all their skills they have learnt in previous semesters. This project help to gather experience, and feel of working with real world problem. This helps them a lot.

CMS-A-DSE-A-4-TH	Multimedia and its Application	In this course students learn about different Multimedia concepts like Images, Audio, Video, Animation etc. They also know how these are implemented in computer system.
CMS-A-DSE-A-4-P	Multimedia and its Application Lab	Students learn how to work with Photo editing software (GIMP), Video editing software (VSDC Free Video Editor) and Audio editing software (Audacity). They are also given assignments that they solve in software LAB.
CMS-A-DSE-B-4-TH	Advance Java	Students learn different aspects of Advanced Java like Servlet, Sessions, JSP, Java Script, JQuery etc. They also learn how to work with Spring Framework and multiple design patterns like DAO, DTO, MVC etc.
CMS-A-DSE-B-4-P	Advance Java Lab	Students are assigned multiple assignments based on what they have learnt in Advanced Java theory classes. They solves this problems using Java Programming language.