

# VIDYASAGAR UNIVERSITY

Midnapore, West Bengal



*PROPOSED CURRICULUM & SYLLABUS (DRAFT) OF*

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**BACHELOR OF SCIENCE WITH COMPUTER SC.  
(MULTIDISCIPLINARY STUDIES)**

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**3-YEAR UNDERGRADUATE PROGRAMME**  
*(w.e.f. Academic Year 2023-2024)*

*Based on*

**Curriculum & Credit Framework for Undergraduate Programmes  
(CCFUP), 2023 & NEP, 2020**

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VIDYASAGAR UNIVERSITY, PASCHIM MIDNAPORE, WEST BENGAL

**VIDYASAGAR UNIVERSITY**  
**BACHELOR OF SCIENCE IN MULTIDISCIPLINARY STUDIES with COMPUTER SCIENCE**  
*(under CCFUP, 2023)*

| Level  | YR.             | SEM                      | Course Type        | Course Code  | Course Title   | Credit | L-T-P | Marks |     |       |     |
|--|-----------------|--------------------------|--------------------|--------------|--|--------|-------|-------|-----|-------|-----|
|  |                 |                          |                    |              |  |        |       | CA    | ESE | TOTAL |     |
| B.Sc. in Physical Sc./ Math. & Comp. Sc. with Computer Science | 1 <sup>st</sup> | I                        | <b>SEMESTER-I</b>  |              |  |        |       |       |     |       |     |
|  |                 |                          | Major (Disc.-A1)   | COSPMJ101    | <b>T: Introduction to Computers</b><br><i>(To be studied by the students taken Computer Science as Discipline-A)</i>                           | 4      | 3-0-1 | 15    | 60  | 75    |     |
|  |                 |                          | SEC                | SEC01        | <i>To be chosen from SEC-01 of Discipline A/B/C of their Hons. prog.</i>   | 3      | 0-0-3 | 10    | 40  | 50    |     |
|  |                 |                          | AEC                | AEC01        | Communicative English-1 ( <i>common for all programmes</i> )   | 2      | 2-0-0 | 10    | 40  | 50    |     |
|  |                 |                          | MDC                | MDC01        | Multidisciplinary Course-1 ( <i>to be chosen from the list</i> )   | 3      | 3-0-0 | 10    | 40  | 50    |     |
|  |                 |                          | VAC                | VAC01        | VAC-01: ENVS ( <i>common for all programmes</i> )  | 4      | 2-0-2 | 50    | 50  | 100   |     |
|  |                 |                          | Minor (Disc.-C1)   | COS MI 01/C1 | <b>T: Computer Fundamental</b><br><i>(To be studied by the students taken Computer Science as Discipline-C)</i>                                | 4      | 3-0-1 | 15    | 60  | 75    |     |
|  |                 | <b>Semester-I Total</b>  |                    |              |  |        |       | 20    |     |       | 400 |
|  |                 | II                       | <b>SEMESTER-II</b> |              |  |        |       |       |     |       |     |
|  |                 |                          | Major (Disc.-B1)   |              | <i>To be decided</i><br><i>(Same as like A1 for students taken Computer Science as Discipline-B)</i>   | 4      | 3-0-1 | 15    | 60  | 75    |     |
|  |                 |                          | SEC                | SEC02        | <i>To be chosen from SEC-02 of Discipline A/B/C of their Hons. prog.</i>   | 3      | 0-0-3 | 10    | 40  | 50    |     |
|  |                 |                          | AEC                | AEC02        | MIL-1 ( <i>common for all programmes</i> )   | 2      | 2-0-0 | 10    | 40  | 50    |     |
|  |                 |                          | MDC                | MDC02        | Multi Disciplinary Course-02 ( <i>to be chosen from the list</i> )   | 3      | 3-0-0 | 10    | 40  | 50    |     |
|  |                 |                          | VAC                | VAC02        | VAC-02 ( <i>to be chosen from the list</i> )   | 4      | 4-0-0 | 10    | 40  | 50    |     |
|  |                 |                          | Minor (Disc.-C2)   | COS MI 02/C2 | <b>T:Introduction to Programming ; P:Programming in C Lab</b><br><i>(To be studied by the students taken Computer Science as Discipline-C)</i> | 4      | 3-0-1 | 15    | 60  | 75    |     |
|  |                 |                          | Summer Intern.     | CS           | Community Service  | 4      | 0-0-4 | -     | -   | 50    |     |
|  |                 | <b>Semester-II Total</b> |                    |              |  |        |       | 24    |     |       | 400 |
| <b>TOTAL of YEAR-1</b>   |                 |                          |                    |              |  | 44     | -     | -     | 800 |       |     |

P MJ= Major Programme (Multidisciplinary), MI = Minor, A/B = Choice of Major Discipline; C= Choice of Minor Discipline; SEC = Skill Enhancement Course, AEC = Ability Enhancement Course, MDC = Multidisciplinary Course, VAC = Value Added Course; CA= Continuous Assessment, ESE= End Semester Examination, T = Theory, P= Practical, L-T-P = Lecture-Tutorial-Practical, MIL = Modern Indian Language, ENVS = Environmental Studies

## MAJOR (MJ)

**MJ A1/B1: Introduction to Computers**

**Credits 04 (FM: 75)**

**MJ A1/B1T: Introduction to Computers**

**Credits 04**

**Course contents:**

### **MODULE- I: Introduction**

Definition of computer. Characteristics of computer. Generation of computer. Classification of computer (Micro, Mini, Mainframe, Super), Application of computer, Basic concept about Software & Hardware, Bit, Byte, Word Nibble, Computer Languages (Low, High & assembly Level language)

### **MODULE-II: Basic Components of Computer**

Basic organization of digital computer (CPU, CU, ALU, Register set, Communication Path way, Input / Output Devices, Memory Module). CPU: Basic explanation about CU, ALU & Register set as well as all over CPU. Communication Pathway: Definition of Bus, Internal & External Bus, Control, Address & Data Bus. Input devices: Keyboard, Pointing device, handheld device, Optical device, Audio visual device. Output device: Soft copy devices & hard copy devices. Memory Hierarchy (Definition, function, classification, Advantages & Disadvantages): Primary Memory, Secondary Memory, Cache Memory, Virtual Memory.

### **MODULE-III: Number System**

Definition, Positional & non positional number system, Binary, Decimal, octal & hexadecimal number system, Conversion between them, Binary-Decimal-Octal Hexadecimal arithmetic, Signed & Unsigned number, Complement notation ( $r$ 's &  $(r-1)$ 's complement), Addition & Subtraction operation using complement notation, Floating point representation of number, Computer codes (Weighted binary codes (BCD 8421/2421, Reflective, sequential), Non-weighted binary codes (Excess-3, Gray), Error detecting & correcting codes, Alphanumeric codes (ASCII, EBCDIC, Hollerith), BCD addition, Gray to Binary & Binary to Gray conversion.

### **MODULE-IV: Data communication and Computer network**

Definition of data communication, Characteristics of data communication, Component of data communication, mode of data communication, Media of data communication (guided & unguided), Channel capacity. Computer Network: Definition, Network topology (Bus, Ring, Star, Mesh, Tree, Hybrid), Types of network (LAN, MAN, WAN, CCAN, PAN), Network devices (Hub, Repeater, Switch, Bridge, Router, Gateway), Basic idea about e-mail, Search engines, Chatting, Internet conferencing, Intranet.

### **MODULE-V: Operating System**

Definition of OS, Function of OS, Need of OS, Classification of OS (CUI & GUI, Single user, Multi User), Concept of Multi Programming, Multi Tasking & Multi Processing. Booting Process), Basic Concept of Assembler, Loader, Linker, Interpreter.

### **Suggested Readings:**

1. Sinha, P. K., & Sinha, P. (2017). Computer Fundamentals: Concepts, Systems & Applications. BPB Publications.
2. Rajaraman, V. (2017). Fundamentals of Computers. PHI Learning.
3. Prakash, S. (2019). Computer Fundamentals and Programming in C. Laxmi Publications.
4. Pradhan, S. (2017). Computer Fundamentals: Architecture and Organization. Oxford University Press.
5. Bharadwaj, A. S. (2017). Computer Fundamentals and Applications. Wiley India.
6. Deo, N. (2017). Fundamentals of Computers. Dreamtech Press. Acharya, S., & Kamath, M. V. (2017). Computer Fundamentals. Prentice

**MINOR (MI)**

**MI-1/C1: Same as Minor-1 (COSMI01) of Computer Science (Hons) programme**      **Credits 04**  
**Full Marks: 75**

**MI-2/C2: Same as Minor-2 (COSMI02) of Computer Science (Hons) programme**      **Credits 04**  
**Full Marks: 75**

**SKILL ENHANCEMENT COURSE (SEC)**

**TO BE CHOSEN FROM THE BUCKET OF SECs OF SELECTED DISCIPLINE A/B/C**  
**(As per A/B/C Hons. Prog. Syllabus)**