BCA NEP-2020

Syllabus

Semester I

CA-101-T (Problem Solving and Programming in C): Problem-solving techniques, algorithms, flowcharts, C fundamentals (data types, operators, expressions, input/output), control structures (if-else, switch, loops), functions (user-defined, library, recursion), arrays (single and multi-dimensional).

CA-103-T (Computer Organization & Architecture): Number systems, Boolean algebra, logic gates, combinational circuits, sequential circuits, CPU organization, memory organization, I/O organization.

CA-105-T (Discrete Mathematics and Statistics): Set theory, logic, relations, functions, counting, probability, data presentation, measures of central tendency and dispersion, correlation, regression, sampling.

OE-101 (Introduction to Data Science): *(If chosen)* Data science introduction, types of data, applications, lifecycle, role of data scientists, statistics for data science, data science models and tasks, data quality, pre-processing, visualization.

VSEC-101 (HTML and Web Page Designing): HTML elements and tags, CSS, JavaScript, website design.

Semester 2

CA-151-T (Advanced C Programming): Advanced C features, data types, preprocessor directives, pointers, strings, structures, file handling.

CA-153-T (Introduction to Microcontrollers): Microcontroller basics, 8051 architecture and programming, interfacing techniques, applications.

CA-155-T (Linear Algebra): Systems of linear equations, matrices, vector spaces, dimensions, rank, nullity, eigenvalues, eigenvectors, linear transformations.

OE-151 (Data Science using Spreadsheet Sohware): *(If chosen)* Spreadsheet concepts, functions, formulas, charts, graphics, filters, sorting, data analysis.

VSEC-151 (Sohware Tools for Business Communication): Word processing, spreadsheets, presentations, electronic communication tools, G-Suite.

Semester III

CA-201 (Data Structures): Various data structures. *(Specific data structures not listed in the provided syllabus excerpt).*

CA-221 (C++ Programming): C++ programming concepts. *(Specific concepts not listed in the provided syllabus excerpt).*

CA-231-FP (Field Project): A practical project.

CA-241-MN (Programming with Python - Minor): Python programming. *(If Minor is chosen)*

OE-201 (Introduction to Artificial Intelligence): Basic AI concepts. *(If chosen)*

IKS-100/CA-200 (Generic Course from University Basket/Indian Knowledge for Computing Systems): Topics vary.

Semester IV

CA-251 (Database Management Systems): Database concepts. *(Specific concepts not listed in the provided syllabus excerpt).*

CA-271-VSEC (Python Programming): More Python programming.

CA-281 (Community Project): A community-based project.

CA-291-MN (Intro to AI & Machine Learning - Minor): AI/ML Introduction. *(If Minor is chosen)*

OE-251 (Sohware Tools for Office Administration): Office software tools. *(If chosen)*

CA-271-EEM (Startup and Entrepreneurship): Startup and entrepreneurship concepts.

AEC-101/Generic Course from University Basket: Topics vary.

Semester V

CA-301 (Sohware Engineering and Testing): Software development lifecycle, testing methodologies.

CA-302/304 (Fundamentals of AI/Data Science): Core AI and data science concepts.

CA-310 or 312 or 314 (UI/UX Design OR Cloud Computing OR Cyber Security): One elective is chosen.

CA-321 (Core JAVA Programming): Java fundamentals.

CA-331 (Field Project): A practical project.

CA-341-MN (Introduction to AR/VR - Minor): AR/VR basics. *(If Minor is chosen)*

Semester VI

CA-351 (Sohware Project Management): Project management principles applied to software.

CA-352 (Web Programming): Web development concepts. *(Specific technologies not specified).*

CA-354 (Operating System Design): OS Design principles.

CA-360 or 362 or 364 (Prompt & Generative AI OR Big Data and Analytics OR Mobile Application Development): One elective is chosen.

CA-371 (Advanced Java Programming): Advanced Java topics.

CA-381 (On-the-Job Training/Internship): Practical work experience.

Semester VII & VIII (Hon. with Research and Multidisciplinary Minor)

Advanced topics including Object-Oriented Modeling and Design, Operations Research, Natural Language Processing, Machine Learning, Full Stack Development, Research Project, etc.
The specific minor chosen will add additional courses.

Semester VII & VIII (Hon. and Multidisciplinary Minor)

Similar to above, but with a stronger focus on a specific multidisciplinary minor and possibly an internship/OJT.

Semester VII & VIII (Double Minor)

Focus on two minor specializations, chosen from university basket courses, along with a research project.

Thank you :)