

CURRICULUM & SYLLABUS



**CHOICE BASED CREDIT SYSTEM (CBCS)
FOR
BACHELOR OF COMPUTER APPLICATIONS
(3 Year Undergraduate Degree Program)
[w. e. f. Academic Session 2021-2022]**

**FACULTY OF SCIENCE & HUMANITIES
SRM UNIVERSITY DELHI-NCR, SONEPAT
Plot No.39, Rajiv Gandhi Education City, P.S. Rai, Sonapat
Haryana-131029**

COURSE CURRICULUM
BACHELOR OF COMPUTER APPLICATIONS
DEGREE COURSE
PROGRAMME COURSES STRUCTURE SEMESTERWISE

SEMESTER-I

| Course Code | Category | Course | Hours Per Week | | | |
|------------------|----------|---|----------------|----------|----------|-----------|
| | | | L | T | P | C |
| Theory | | | | | | |
| 21BCA101 | CC | Basics of Computer Science | 4 | 0 | 0 | 4 |
| **** | OE | Open Elective Course – I | 2 | 0 | 0 | 2 |
| 21BCA103 | CC | Digital Logic Fundamentals | 4 | 0 | 0 | 4 |
| 21BCA104 | CC | Introduction to Programming Language with C | 4 | 0 | 0 | 4 |
| 20CA109 | BAS | Fundamental Mathematics | 3 | 1 | 0 | 4 |
| Practical | | | | | | |
| 21BCA153 | P | Digital Logic Fundamentals Lab | 0 | 0 | 2 | 1 |
| 21BCA154 | P | C Programming Lab | 0 | 0 | 2 | 1 |
| Total | | | 17 | 1 | 4 | 20 |

COURSE CURRICULUM

BACHELOR OF COMPUTER APPLICATIONS

DEGREE COURSE

PROGRAMME COURSES STRUCTURE SEMESTERWISE

SEMESTER-II

| Course Code | Category | Course | Hours Per Week | | | |
|------------------|----------|---------------------------------------|----------------|----------|----------|-----------|
| | | | L | T | P | C |
| Theory | | | | | | |
| 21AEEN201 | HSS | English Communication | 4 | 0 | 0 | 4 |
| **** | OE | Open Elective Course - II | 2 | 0 | 0 | 2 |
| 21ESUG201 | HSS | Environmental Studies | 3 | 1 | 0 | 4 |
| 21BCA204 | CC | Object Oriented Programming Using C++ | 4 | 0 | 0 | 4 |
| 21BCA205 | CC | Discrete Mathematics | 4 | 0 | 0 | 4 |
| 21CA016 | BAS | Elementary Mathematics | 3 | 1 | 0 | 4 |
| Practical | | | | | | |
| 21BCA254 | P | OOPs Lab | 0 | 0 | 2 | 1 |
| 21BCA252 | P | Office Automation Lab | 0 | 0 | 2 | 1 |
| 21BCA271 | LP | Live Project – I | 0 | 0 | 2 | 1 |
| 21SS251 | SEC | Effective Communication Skills | 0 | 0 | 2 | 1 |
| Total | | | 20 | 2 | 8 | 26 |

COURSE CURRICULUM

BACHELOR OF COMPUTER APPLICATIONS

DEGREE COURSE

PROGRAMME COURSES STRUCTURE SEMESTERWISE

SEMESTER-III

| Course Code | Category | Course | Hours Per Week | | | |
|------------------|----------|---------------------------------|----------------|----------|-----------|-----------|
| | | | L | T | P | C |
| Theory | | | | | | |
| 21BCA301 | CC | Data Structures Using C | 4 | 0 | 0 | 4 |
| 21BCA302 | CC | Computer System Architecture | 4 | 0 | 0 | 4 |
| 21BCA303 | CC | Operating Systems | 4 | 0 | 0 | 4 |
| 21BCA304 | CC | Database Management System | 4 | 0 | 0 | 4 |
| **** | PE | Program Elective Course – I | 3 | 1 | 0 | 4 |
| Practical | | | | | | |
| 21BCA351 | P | Data Structure Using C Lab | 0 | 0 | 2 | 1 |
| 21BCA353 | P | Operating System Lab | 0 | 0 | 2 | 1 |
| 21BCA354 | P | Database Management System Lab | 0 | 0 | 2 | 1 |
| 21BCA371 | LP | Live Project – II | 0 | 0 | 2 | 1 |
| 21SS352 | SEC | Teamwork & Interpersonal Skills | 0 | 0 | 2 | 1 |
| Total | | | 19 | 1 | 10 | 25 |

COURSE CURRICULUM

BACHELOR OF COMPUTER APPLICATIONS

DEGREE COURSE

PROGRAMME COURSES STRUCTURE SEMESTERWISE

SEMESTER-IV

| Course Code | Category | Course | Hours Per Week | | | |
|------------------|----------|---|----------------|----------|-----------|-----------|
| | | | L | T | P | C |
| Theory | | | | | | |
| 21BCA401 | CC | Scripting Languages & Web Technologies | 3 | 0 | 0 | 3 |
| 21BCA402 | CC | Multimedia & Applications | 3 | 0 | 0 | 3 |
| 21BCA403 | CC | Java Programming | 3 | 0 | 0 | 3 |
| 21BCA404 | CC | Data Communication & Networks | 3 | 0 | 0 | 3 |
| 21BCA405 | CC | Design and Analysis of Algorithm | 3 | 0 | 0 | 3 |
| **** | OE | Open Elective Course – III | 3 | 0 | 0 | 3 |
| Practical | | | | | | |
| 21BCA451 | P | Scripting Languages & Web Technology Lab | 0 | 0 | 2 | 1 |
| 21BCA453 | P | Java Programming Lab | 0 | 0 | 2 | 1 |
| 21BCA455 | P | Design and Analysis of Algorithms Lab | 0 | 0 | 2 | 1 |
| 21BCA471 | LP | Live Project - III | 0 | 0 | 2 | 1 |
| 21SS453 | SEC | Presentation & Speaking Skills | 0 | 0 | 2 | 1 |
| 21CS0201 | SEC | Essentials of Block chain and IoT- Level –I | 0 | 0 | 2 | 1 |
| Total | | | 18 | 0 | 12 | 24 |

COURSE CURRICULUM
BACHELOR OF COMPUTER APPLICATIONS
DEGREE COURSE
PROGRAMME COURSES STRUCTURE SEMESTERWISE
SEMESTER-V

| Course Code | Category | Course | Hours Per Week | | | |
|------------------|----------|--|----------------|----------|-----------|-----------|
| | | | L | T | P | C |
| Theory | | | | | | |
| **** | OE | Open Elective Course – IV | 3 | 0 | 0 | 3 |
| 21BCA502 | CC | Unix & Linux Programming | 3 | 0 | 0 | 3 |
| 21BCA503 | CC | Soft Computing | 3 | 0 | 0 | 3 |
| 21BCA504 | CC | Software Engineering | 3 | 0 | 0 | 3 |
| **** | PE | Program Elective Course – II | 3 | 1 | 0 | 4 |
| Practical | | | | | | |
| 21BCA552 | P | Linux Programming Lab | 0 | 0 | 2 | 1 |
| 21BCA554 | P | Software Engineering Lab | 0 | 0 | 2 | 1 |
| 21BCA506 | P | Seminar | 0 | 0 | 2 | 1 |
| 21BCA556 | LP | Industrial Training | 0 | 0 | 2 | 1 |
| 21BCA571 | LP | Live Project - IV | 0 | 0 | 2 | 1 |
| 21SS554 | SEC | Professional Writing Skills & Interpersonal Skills: Strategies | 0 | 0 | 2 | 1 |
| 21CS0202 | SEC | Artificial Intelligence and Machine Learning – Level- II | 0 | 0 | 2 | 1 |
| Total | | | 15 | 1 | 14 | 23 |

COURSE CURRICULUM

BACHELOR OF COMPUTER APPLICATIONS

DEGREE COURSE

PROGRAMME COURSES STRUCTURE SEMESTERWISE

SEMESTER-VI

| Course Code | Category | Course | Hours Per Week | | | |
|------------------|----------|--|----------------|----------|-----------|-----------|
| | | | L | T | P | C |
| Theory | | | | | | |
| 21BCA601 | CC | Introduction to Python Programming | 4 | 0 | 0 | 4 |
| 21BCA602 | CC | Artificial Intelligence & Expert Systems | 4 | 0 | 0 | 4 |
| 21BCA603 | CC | Network security | 4 | 0 | 0 | 4 |
| 21BCA604 | CC | Fundamental of E- Commerce | 4 | 0 | 0 | 4 |
| **** | PE | Program Elective Course – III | 3 | 1 | 0 | 4 |
| Practical | | | | | | |
| 21BCA652 | P | Artificial Intelligence Lab | 0 | 0 | 2 | 1 |
| 21BCA671 | LP | Major Project | 0 | 0 | 8 | 4 |
| Total | | | 19 | 1 | 10 | 25 |

LIST OF SKILL ENHANCEMENT COURSES

| Course Code | Course | Category | L | T | P | Credits |
|---------------------------|---|----------|---|---|---|---------|
| TECHNICAL TRAINING | | | | | | |
| 21CS0201 | Essentials of Block chain and IoT- Level –I | SEC | 0 | 0 | 2 | 1 |
| 21CS0202 | Artificial Intelligence and Machine Learning – Level- II | SEC | 0 | 0 | 2 | 1 |
| SOFT SKILL | | | | | | |
| 21SS251 | Effective Communication Skills | SEC | 0 | 0 | 2 | 1 |
| 21SS352 | Teamwork & Interpersonal Skills | SEC | 0 | 0 | 2 | 1 |
| 21SS453 | Presentation & Speaking Skills | SEC | 0 | 0 | 2 | 1 |
| 21SS554 | Professional Writing Skills & Interpersonal Skills: Strategies | SEC | 0 | 0 | 2 | 1 |

LIST OF PROGRAM ELECTIVE COURSES

| Code | Category | Course | L | T | P | C |
|------------------------------|----------|-------------------------------------|---|---|---|---|
| Program Elective-I | | | | | | |
| 21BCA 305A | PE | Computer Graphics | 3 | 1 | 0 | 4 |
| 21BCA 305B | PE | System Modelling and Simulation | 3 | 1 | 0 | 4 |
| 21BCA 305C | PE | Digital Image Processing | 3 | 1 | 0 | 4 |
| 21BCA 2027 | PE | Optimization Techniques | 3 | 1 | 0 | 4 |
| 21BCA 305D | PE | Compiler Design | 3 | 1 | 0 | 4 |
| 21BCA 305E | PE | Principles of Programming Languages | 3 | 1 | 0 | 4 |
| Program Elective –II | | | | | | |
| 21BCA 505A | PE | Distributed Operating System | 3 | 1 | 0 | 4 |
| 21BCA 505B | PE | System Software | 3 | 1 | 0 | 4 |
| 21BCA 505C | PE | Software Project Management | 3 | 1 | 0 | 4 |
| 21BCA 505D | PE | Grid Computing | 3 | 1 | 0 | 4 |
| 21BCA 505E | PE | Object Oriented Analysis and Design | 3 | 1 | 0 | 4 |
| 21BCA 505F | PE | Neural Networks and Fuzzy logic | 3 | 1 | 0 | 4 |
| 21BCA 505G | PE | Cybersecurity | 3 | 1 | 0 | 4 |
| 21BCA 505H | PE | Theory of Computation | 3 | 1 | 0 | 4 |
| Program Elective –III | | | | | | |
| 21BCA605A | PE | Big Data and Analytics | 3 | 1 | 0 | 4 |
| 21BCA605B | PE | Wireless Ad hoc and Sensor Networks | 3 | 1 | 0 | 4 |
| 21BCA605C | PE | Data Warehousing and Data Mining | 3 | 1 | 0 | 4 |
| 21BCA605D | PE | Mobile Computing | 3 | 1 | 0 | 4 |
| 21BCA605E | PE | Machine Learning | 3 | 1 | 0 | 4 |

| | | | | | | |
|-----------|----|--------------------------|---|---|---|---|
| 21BCA605F | PE | Open Source Software | 3 | 1 | 0 | 4 |
| 21BCA605G | PE | Advance Java Programming | 3 | 1 | 0 | 4 |
| 21BCA605H | PE | Cloud Computing | 3 | 1 | 0 | 4 |

LIST OF OPEN ELECTIVES

| Code | Category | Course | L | T | P | C |
|--------------------------|----------|---|---|---|---|---|
| Open Elective-I | | | | | | |
| 21FLGR301 | OE | German Language Phase – I | 2 | 0 | 0 | 2 |
| 21FLFR301 | OE | French Language Phase – I | 2 | 0 | 0 | 2 |
| Open Elective-II | | | | | | |
| 21FLGR401 | OE | German Language Phase – II | 2 | 0 | 0 | 2 |
| 21FLFR401 | OE | French Language Phase – II | 2 | 0 | 0 | 2 |
| Open Elective-III | | | | | | |
| SEC-FT-01 | OE | Entrepreneurship and New Venture Management | 3 | 0 | 0 | 3 |
| Open Elective –IV | | | | | | |
| 21ESUG202 | OE | Sustainable Growth and Development | 3 | 0 | 0 | 3 |
| 21ESUG203 | OE | Waste Management | 3 | 0 | 0 | 3 |