

**Bachelor of Arts in Professional Studies with a major in Computing
BAPS-C Resource Guide**

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BAPS-C Catalog Description:

The Bachelor of Arts in Professional Studies with a Major in Computing builds knowledge and skills in computing and technology-based systems for application in a range of organizational settings. In this program, students examine their prior and current work-based experience in light of theory and principles. This program intentionally helps students to integrate liberal arts learning, with an emphasis on agile and critical thinking, with a professional specialization.

This major advances students' foundational knowledge in a range of computing areas. Students may pursue concentrations in computer science, information systems, information technology, network technology, and security. With a range of elective courses offered in the major, students may specialize further in areas of particular interest to them.

Graduates of this program will be particularly well positioned to make optimal decisions in the workplace and become promotable leaders. This major is designed for working adult students, 24 and older, who seek the following:

- A professional major valued by employers, emphasizing learning that can be applied immediately.
- Acceleration and affordability by being able to maximize transfer credit.
- Acceleration and affordability by earning credit through assessment of evidence of their prior personal and professional experiential learning.
- Learning in the company of other adults with diverse workplace experiences.
- A degree that can advance their careers by enhancing their current professional portfolio with specialized computing skills.
- A structured path to degree completion.
- Preparation for a master's program.

BAPS-C Program Learning Outcomes:

Students will be able to:

- Design a technology-based solution to a problem in an organization.
- Plan the implementation of a technology-based system customized to an organization.
- Analyze a technology-based system in an organization and recommend improvements.
- Investigate problems using qualitative and quantitative methods.
- Apply ethical principles in context.
- Apply various methods of communication in multiple settings.
- Analyze and apply different liberal arts perspectives.

Residence Requirements:

Residence requirements are courses that need to be taken at DePaul. A minimum of 60 credit hours are residence requirements in the BAPS-C program. Of those 60 credits, 20 credits are completed as specific courses from the Lifelong Learning and Liberal Learning categories. These courses are LL 201 or RPL 101, LL 290, LL 301, LL 302, and IN 307.

In addition, 40 credits need to be completed in residence from the Professional Studies Core and Computing requirements. 2 of those credits are completed in the FA 199 course. Also, 20 of these 40 credits need to be completed as courses taken from CDM.

BAPS-C Degree Requirements:

The BAPS-C degree is a 192 credit hour program with 60 credit hours required in residence. Program requirements are illustrated in charts found at the end of this document.

BAPS-C Core Requirements:

(78 credits, 20 in residence, specific courses listed below)

Lifelong Learning (32 credits, 16 in residence)

- LL 201: Reflective Learning or RPL 101: Prior Learning Assessment, 2 CHrs, Residence Requirement
- LL 305: Active Citizens, or equivalent, 4 Credit Hours
- MAT 130: Pre-Calculus, 4 Credit Hours, currently on campus only
- LL 261: Essay Writing, 4 Credit Hours
- LL 270: Critical Thinking, 4 Credit Hours
- LL 290: Research Writing, 4 Credit Hours, Residence Requirement
- LL 300: Research Methods, 6 Credit Hours, Residence Requirement
- LL 302: Experiential Learning Practicum, 4 Credit Hours, Residence Requirement

Liberal Learning (46 credits, 4 in residence)

- Liberal Arts in Action: (CCA 281, CCH 281, CCS 281), 6 Credit Hours
- Arts & Ideas, 12 Credit Hours
- Human Community, 12 Credit Hours
- Scientific World, 12 Credit Hours
- IN 307 Integrative Learning, 4 Credit Hours, Residence Requirement

Major and Elective Requirements:

(114 credits, at least 40 credit hours in residence from Professional Studies Core and Computing requirements including FA 199 and at least 20 credit hours taken from CDM in residence)

Professional Studies Core Courses (14 credits, 2 in residence)

- FA 199: Career Assessment & Planning, 2 Credit Hours, Residence Requirement
- DCM 330: Professional Communications in the Workplace, 4 Credit Hours
- DCM 317: Ethics in the Professions or DCM 318 Social Justice in the Professions, 2 Credit Hours
- DCM 319: Creativity and Innovative Thinking Thinking or CCA 170: Creativity + Entrepreneurship, or equivalent, 2 Credit Hours
- CCH 300: Globalization & Professional Practice or CCH 283: Global Perspectives or CCH 239: Business, Technology, 4 Credit Hours

Computing Core Courses (8 credits)

- IT 263: Applied Networks & Security, 4 Credit Hours
- IT 223: Data Analysis I, 4 Credit Hours, Prerequisite: MAT 130

Open Electives (44-48 credits depending on chosen concentration)

BAPS-C Concentrations:

Computer Science Concentration: Provides essential education in the foundations of computing, data storage and information processing. With this foundation, graduates of the program can easily adapt to and create new information technologies, new computing paradigms, and new ideas for applying computer systems.

Computer Science students will be able to:

- Interpret the informal description of an algorithm, translate the description to a program, and write tests to determine whether a program solves the intended problem.
- Analytically determine the running time of a program and validate the analysis experimentally.
- Select an appropriate combinatoric or statistical technique to solve an analytic problem.
- Analyze and select an algorithm based on systems effects.
- Solve a specific problem by selecting appropriate data structures, algorithms, and customize them to the problem.
- Correlate the input of a compiler and its assembly language output.
- Write programs that interact with other processes and with databases.
- Implement systems that run across several distributed computers.
- Criticize a program on the basis of its maintainability and suggest improvements

- Interpret new Application Program Interfaces (APIs) and use them in developing computer applications.

Computer Science Course requirements:

- CSC 243: Python for Programmers, 4 Credit Hours, Prerequisite: MAT 130
- CSC 300: Data Structures in JAVA I, 4 Credit Hours, Prerequisite: CSC 243
- CSC 301: Data Structures in JAVA II, 4 Credit Hours, Prerequisite: MAT 140 and CSC 300
- MAT 140: Discrete Mathematics I, 4 Credit Hours, Prerequisite: MAT 130
- CSC 373: Computer Systems I, 4 Credit Hours, Prerequisite: MAT 140 and CSC 300
- CSC 374: Computer Systems II, 4 Credit Hours, Prerequisite: CSC 373
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computer Science Capstone Course: CSC 394: Software Projects, **Online by request**, 4 Credit Hours, Prerequisite: CSC 301.

Special Note: The Computer Science concentration has a pre-requisite of one course in JAVA or C++, which can be transferred as a Scientific World or Open Elective. A second option is to take CSC 241 at DePaul and place it as a Scientific World or Open Elective and then take CSC 242 as a substitute for CSC 243 in the concentration.

Information Systems Concentration: Focuses on the organizational and business application of computers and related technologies. It prepares students for careers in IT project management, systems analysis & design, database administration, helpdesk, enterprise systems administration, and user training.

Information Systems students will be able to:

- Describe major types and characteristics of business information systems.
- Design data flows and process modeling for commonly deployed business information systems.
- Develop a database diagram from a set of business rules, and map the diagram to a set of tables in a relational database.
- Describe the characteristics and implementation requirements for enterprise-level information systems.
- Create a project charter or plan for the development of an information system.
- Recommend testing, deployment options and user training for a particular type of business information system.
- Construct a project plan for a major information system development.

Information Systems Course requirements:

- IS 201: Introduction to Information Systems, 4 Credit Hours, Prerequisite: None
- IS 215: Analysis and Design Techniques, 4 Credit Hours, Prerequisite: None
- IT 240: Introduction to Databases, 4 Credit Hours, Prerequisite: None
- IS 372: Software Project Management, 4 Credit Hours, Prerequisite: IS 215
- IS 373: Introduction to Enterprise Systems, 4 Credit Hours, Prerequisite: IS 215
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Information Systems Capstone Course, IS 376: Information Systems Project, **Currently on campus only**, 4 Credit Hours, Prerequisite: IS 372

Information Technology Concentration: Focuses on preparing graduates who are concerned with issues related to advocating for users and meeting their needs within an organizational and societal context through the selection, creation, application, integration and administration of computing technologies. This degree prepares you to become skilled in problem solving and programming, networks and communications systems, databases, Internet and Web technologies, security and project management, and have a strong grasp of business concepts and technical communications.

Information Technology students will be able to:

- Select and implement the most appropriate communication protocols to support an application's requirements.
- Choose and conduct at least one appropriate method for each stage of the human-centered design (HCD) process.

- Design, implement and test a normalized database from a case study.
- Construct a website using a framework that includes both client-side and server-side.
- Prepare a threat analysis and recommend the appropriate countermeasures.
- Choose software components and integrate them to create a working application.
- Prepare technical documents and present to multiple audiences for their capstone project.

Information Technology Course requirements:

- IT 130: Introductory Computing for the Web, 4 Credit Hours, Prerequisite: None
- IT 211: Introduction to Applied Programming, 4 Credit Hours, Prerequisite: IT 130
- IT 231: Web Development I, 4 Credit Hours, Prerequisite: IT 130
- IT 240: Introduction to Databases, 4 Credit Hours, Prerequisite: None
- IT 280: Team Project Development with Agile, 4 credits, Prerequisite: None
- UXD 210: Human Computer Interaction, 4 Credit Hours, Prerequisite: None, **Online by request**
- IT 320: Content Management Systems, 4 Credit Hours, Prerequisite: IT 211 or IT 231,
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Information Technology Capstone 1 Course, IT 394: Software Projects for Community Clients I, **Online by request**, 4 Credit Hours, Prerequisite: IT 320 and IT 280.
- Information Technology Capstone 2 Course IT 395: Software Projects for Community Clients II, **Online by request** 4 Credit Hours, Prerequisite: IT 394

Network Technology Concentration: Focuses on the theory and practice of designing, deploying and managing both wired and wireless networks technologies, including broadband Internet access technologies, interconnection technologies, network convergence, and network security.

Network Technology students will be able to:

- Describe each local area network and wide area network technology commonly used in the marketplace and describe advantages and disadvantages to each and choose appropriate technologies in a case study based on business objectives.
- Write clear definitions of ARP, ICMP, DNS, RIP, OSPF and BGP and illustrate their use in protocol diagrams.
- Walk through a working example of a network system and show how all devices are used to provide data services.
- Cable together a set of devices (servers, cables, switches and routers), test connections, configure IP addressing and packet forwarding using appropriate commands in Windows, MacOS, Linux and Cisco IOS operating systems.
- Describe 802.11 CSMA/CA access methods, addressing, operational modes and encryption methods.
- Discuss the worldwide transition from IPv4 to IPv6 technologies and key aspects of the IPv6 protocol, including address format, neighbor discovery, basic routing and security.

Network Technology Course requirements:

- CSC 241: Intro to Computer Sci. or CSC 243: Python Program, or IT 211: Applied Program, Prerequisite: MAT 130, 4 credits.
- NET 311: Computers in Telecommunications Systems, 4 Credit Hours, Prerequisite: IT 263 and IT 211 or CSC 241 or CSC 243
- NET 362: Principles of Data Communications, 4 Credit Hours, Prerequisite: NET 311 and IT 263
- NET 363: Introduction to Local Area Networks, **Currently on campus only**, 4 Credit Hours, Prerequisite: IT 263
- NET 365: Network Interconnection Technologies, 4 Credit Hours, Prerequisite: NET 363
- NET 372: Digital Access Services, **Currently on campus only**, 4 Credit Hours, Prerequisite: NET 362 and NET 363.
- NET 379: Telecommunication and Network Security Practicum, **Currently on campus only**, 4 Credit Hours, Prerequisite: NET 365 or Instructor consent.
- CNS 378: Host Based Security, 4 Credit Hours, Prerequisite: NET 363
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Computing Elective, 4 Credit Hours, Approved by CDM Faculty Advisor
- Network Technology Capstone Course: NET 376: Network Project, **Currently on campus only**, 4 Credit Hours, Prerequisite: NET 365

Security Concentration: This focus of study emphasizes the fundamentals of information security, security infrastructure design and implementation, network security technologies, best practices in security design, and security management.

Security students will be able to:

- Explain the differences between the three major goals of information security: confidentiality, integrity and availability.
- List and explain one technique for ensuring each.
- Implement in the security lab environment a comprehensive and integrated security infrastructure that meets or exceeds current best practices.
- Design and write security policies by writing a policy for an environment presented in a case study.
- Perform risk assessment for an organization.
- Design a security infrastructure based on the business requirements of an organization.
- Define appropriate security incident response policies.
- Identify weaknesses in non-technical elements such as processes and human factors.
- Perform a penetration testing for an organization.

Security Course requirements:

- CSC 233: Codes and Ciphers, 4 Credit Hours, Prerequisite: MAT 130
- CSC 243: Python for Programmers, 4 Credit Hours, Prerequisite: MAT 130
- CSEC 228: Legal, Ethics and Social Issues in Information Security, 4 Credit Hours, Prerequisite: None
- NET 311: Computers in Telecommunications Systems, 4 Credit Hours, Prerequisite: CSC 243
- CSEC 340: Fundamentals of Information Assurance, 4 Credit Hours, Prerequisite: None
- CSEC 378: Host Based Security, 4 Credit Hours, Prerequisite: NET 363
- NET 363: Introduction to Local Area Networks, **Currently on campus only**, 4 Credit Hours, Prerequisite: IT 263
- NET 365: Network Interconnection Technologies, 4 Credit Hours, Prerequisite: NET 363
- NET 377: Fundamentals of Network Security, **Currently on campus only**, 4 Credit Hours, Prerequisite: NET 365
- NET 379: Telecommunication and Network Security Practicum, **Currently on campus only**, 4 Credit Hours, Prerequisite: NET 365 or Instructor consent.
- Security Capstone Course I: CSEC 394: Information Systems Security Engineering I, **Currently on campus only**, 4 Credit Hours, Prerequisite: CSEC 378 and NET 377 and NET 379
- Security Capstone Course I: CSEC 395: Information Systems Security Engineering II, **Currently on campus only**, 4 Credit Hours, Prerequisite: CSEC 394

Special Note: The Security concentration has a pre-requisite of one course in JAVA or C++, which can be transferred as a Scientific World or Open Elective. A second option is to take CSC 241 at DePaul and place it as a Scientific World or Open Elective and then take CSC 242 as a substitute for CSC 243 in the concentration.

Computing Elective Topic Areas:

To qualify as Computing Electives, courses need to be taken from the following CDM course categories or transfer courses that have been determined to be equivalent to 200 level or higher in any of these CDM categories. The CDM categories are: Computer Science (CSC); Cybersecurity (CSEC); Data Science (DSC); E-Commerce (ECT); Game Development (GAM); Information Systems (IS); User Experience Design (UXD); Information Technology (IT); and Network Technologies (NET). BAPS-C students need to consult with their CDM Faculty Advisor to select and approve CDM courses and transfers to be used as the available Computing Electives. The number of credit hours placed in the Computing Electives varies by concentration.

Open Electives:

Most courses can qualify for Open Electives, whether taken at DePaul or transferred to the program from other institutions. They must be college level courses, listed as 100 level or higher from regionally accredited schools. Partial credit from courses that are placed in other program categories can be moved to the Open Electives if available. For example, if a 6 credit hour course is placed into a 4 credit hour slot, the 2 excess credits can be moved to the Open Electives and apply to the total credits needed in the Open Electives.

Prior Learning Assessments (PLA):

Opportunities to get academic credit for PLA, or experiential learning, are available in the BAPS-C program. Students can provide evidence of college-level learning acquired through work, professional development, certificate programs, and other structured learning experiences applicable to degree requirements.

BAPS-C students can use PLA for any requirements not listed as Residence Requirements in the SCPS sections of the curriculum including the Lifelong Learning, Liberal Learning, Professional Studies Core or Open Electives.

PLA sought for computing requirements is subject to the CDM faculty advisor's recommendations and approval. Documentation for computing related PLA includes recognized certifications aligning with courses or satisfactory achievement on final examinations of CDM courses.

After assessment and approval, credit is labeled as "PLA Credit" in the student's records and credit hours are attached to the entry toward the 192 credit hour total. The item is then directed to the correct slot on the student's Degree Progress Report (DPR) to complete the requirement.

PLA credit does not satisfy residency requirements, but may satisfy up to 25% of non-residency requirements in the BAPS-C program. For more information, go to [SCPS PLA](#).

CDM Test Exams:

CDM offers Assessment Exams for courses required as pre-requisites in CDM graduate programs. BAPS-C students may take these exams to fill computing requirements with the approval of their CDM Faculty Advisor. The advisor will forward the approval to the CDM Advising office and the student will be contacted with a confirmation of the exam registration. Exams are graded on a pass/fail basis and only one attempt is allowed.

<http://www.cdm.depaul.edu/academics/Pages/GraduateAssesmentExams.aspx>

The following topics are available.

- CNS 418: Introduction to Host Security
- CSC 400: Discrete Structures for Computer Science
- CSC 401: Introduction to Programming
- CSC 402: Data Structures I
- CSC 403: Data Structures II
- CSC 404: Accelerated C++
- CSC 406: Systems I
- CSC 407: Systems II
- CSC 412: Tools and Techniques for Computational Analysis
- ECT 410: Development of Web-Based Business Applications
- HCI 402: Foundations of Digital Design
- HCI 406: Website Design for HCI
- IT 403: Statistics and Data Analysis
- IT 411: Scripting for Interactive Systems
- TDC 405: Voice and Data Network Fundamentals
- TDC 411: Computers in Information Systems and Telecommunications
- TDC 413: Introduction to LAN and WAN

Minimum Grade Requirements:

BAPS-C students must get a grade of C- or higher to fill course requirements in the Major Requirements sections of the program, including the Professional Studies Core and all the computing requirements, the Computing Core, the computing concentration, and the Computing Electives. A grade of C- or better is also required for LL 261: Essay Writing. Any other degree requirements not mentioned above can be met with a D or higher grade. In addition, students must have a final cumulative grade point average (GPA) of 2.0 to complete the program. Transfer courses and PLA credit is not calculated into the GPA.

Online Availability:

- All SCPS portions of the curriculum are available online.
- In terms of the five computing concentrations, some are more available online than others.
- Students need to complete at least 20 hours of credit from CDM, which means there are opportunities for transfer credit and experiential learning if student has difficulty coming to campus. In any case, students need to plan ahead to complete their requirements in the most efficient manner.

- Some of the required courses have the disclaimer of "Online by request" and others say "Currently on campus only". The implication is that most of the others are available online. That does not mean that they are available every term or every term online.
- Some courses that are not listed on the schedule as online sections can be made available online by request. Students need to contact the CDM Advising Center to request if a course can be added to the online schedule. However, this request needs to be made at least 4 weeks before the start of the quarter.
- The following notations regarding online availability are listed on the program charts.

Computer Science has (1) Online by request
 Information Systems has (1) Currently on campus only
 Information Technology has (3) Online by request
 Network Technology has (4) Currently on campus only
 Security has (5) Currently on campus only

- If you are enrolled in an online section that contains lecture recordings, your course lectures will be delivered through the Course OnLine (COL) system. COL records classroom lectures that take place on campus.
- The recordings of your class will be available online for students within two (2) hours after the regular class session is completed and will be available for review for one (1) week after the end of finals week. If you downloaded the recordings in an offline format earlier in the quarter they will cease to function one (1) week after the end of finals week.
- A link to the recordings can be found on the home page of the D2L course page.
- Exams are proctored with the COL courses, for more information on exam proctoring, [select this link](#).
- Questions about online courses can be addressed by the CDM Advising Center.

BAPS-C Combined Degree Program:

This program option is available to students in the BAPS-C degree program. The Combined Degree Program allows students in the BAPS-C to take up to 3 Graduate level CDM courses and apply them to both the BAPS-C program requirements and a Master's level program at CDM including the MSAT joint degree program with SCPS (see MSAT program description below). These courses carry the CDM Undergraduate tuition rate and require admission to the Combined Degree Program and a special registration process with the approval of the student's CDM Faculty Advisor.

Admissions Process:

To be accepted to the program, students must meet and maintain the following criteria or they will be dropped from the program and the graduate courses taken will not apply to the MS program.

- Minimum of 6 courses or 24 credit hours completed at DePaul
- GPA of 3.3 or higher at DePaul
- Endorsement of faculty advisor
- Must get grade of C- or higher in Graduate level courses

BAPS-C students interested in the program can send an email to Kenn Skorupa to apply and include their name, DePaul ID number and copy their Faculty Advisor. Students will be contacted by email when they have been approved for the Combined Degree Program.

Registration for Graduate Courses:

The combined degree course registration process is the same for BAPS-C and CDM students. The student's faculty advisor will email Associate Dean Lucia Dettori requesting the enrollment. The following information should be included in the email: student's full name, DePaul ID, graduate course and section, and the undergraduate course requirement where it will be placed in the student's program. The enrollment will be processed for the student. Therefore, the student needs to monitor campus connect to see when it is added.

Master of Science in Applied Technology

The Master of Science in Applied Technology (MSAT) program is a joint degree offered through the School for Continuing and Professional Studies and the College of Computing and Digital Media. The program is designed for people who want to deepen their understanding and use of technology while enhancing their skills and knowledge for improving the interface between technology and people in organizational systems.

The MSAT program allows students to develop a highly focused set of applied technology skills and enhance their understanding of the organizational, interpersonal and learning issues that characterize today's changing work environment. Students also learn how to help organizations connect their technical and social systems with one another.

The program consists of 52 quarter hours which are distributed across program planning and integration, liberal learning seminars, professional core coursework and independent, work-based projects in each area of specialization. Students begin by choosing one of five areas of specialization for their graduate study:

Applied Information Systems prepares students to lead and support an organization's changing needs in the use of information and information technologies.

Applied Network Technology trains professionals to mediate industry demands for innovative network designs, new network applications and services, and the interactions between business enterprises and the network providers that serve them.

Applied IT Project Management advances the capabilities of working professionals to fill the growing need for IT project managers.

Applied Information Technology addresses contemporary needs for understanding and applying the core principles of technology to solve problems, as well as improving effectiveness and increasing efficiencies in corporations, health care institutions and government agencies.

Applied Human-Computer Interaction prepares students to design, implement and evaluate computer interfaces so they are accessible and easy for people to use.

MSAT Contact Information:

Phone: 312-362-8448

Email: scpsgrad@depaul.edu

Website: <https://scps.depaul.edu/academics/graduate/programs/applied-technology-ms/Pages/default.aspx>

BAPS-C Program Advising:

CDM Faculty Advisors

BAPS-C students are assigned to a faculty advisor from the CDM resident faculty. The faculty advisor will assist students in planning their concentration, computing electives, capstone course options and PLA. In addition, they help students to plan for graduate program admissions and general career guidance.

SCPS Advising Center

For questions about SCPS registration, procedures or pre-requisites, you can contact the SCPS Advising Center at 312.362.5445 or by email at scpsadvising@depaul.edu.

CDM Advising Center

For questions about CDM registration, procedures or pre-requisites, you can contact the CDM BAPS-C Advisor, Brooke Shannon, bshannon@cdm.depaul.edu, 312.362.5228 or CDM Advising Services at 312.362.8633 or CDMadvicing@CDM.depaul.edu.

CDM Certificate Programs:

CDM offers Certificate Programs through their Institute for Professional Development in a variety of topic areas that can be used in the BAPS-C program as Computing Electives or Open Electives. These programs vary in the amount of credit hours that are given but the hours can be applied to the elective total hours. These courses must be taken for letter grades and the student must earn a C- or better to count them as BAPS-C requirements.

While students take the CDM certificates for grades, they are considered outside of standard DePaul course offerings and these grades do not count toward the student's GPA. When the certificate is completed and the grade is listed on the system, the student can contact their SCPS advisor to place it in the correct slot on the student's DPR.

Certificate Schedules: The certificate programs may or may not fall into the regular DePaul quarterly schedule and therefore may require a fair amount of advanced planning and/or juggling with regular course schedules. These programs are eligible for financial aid assistance if they are applied to a degree program such as the BAPS-C. For this reason, it is also important to plan ahead as these courses may need to be taken in certain times of the year in order to qualify for aid in a particular financial aid cycle.

Locations: Certificate programs are offered at Loop campus and some are accessible online. For information about these topics, schedules and syllabi for these certificates, go to the [Institute for Professional Development](#) at CDM. Below is a list of topics that are periodically available.

Current Certificate Programs

- Advanced SQL Program, IPD 370
Undergraduate: 1.5 hours of elective credit
- Big Data and NoSQL Program
IPD 351 (undergraduate level): 4 hours of elective credit
- Big Data Using Hadoop Program
IPD 347 (undergraduate level): 4 hours of elective credit
- Big Data Using Spark Program
IPD 341 (undergraduate level): 4 hours of elective credit
- Cloud Computing Technologies Program, IPD 355 (formerly Cloud Computing Fundamentals Program)
Undergraduate: 4 hours of elective credit
- Data Science for Business Program, IPD 346
Undergraduate: 4 hours of elective credit
- Introduction to SQL Program, IPD 343
Undergraduate: 1.5 hours of elective credit
- IPv6 Program
IPD 352 (undergraduate level): 4 hours of elective credit
- Java Developer Program, IPD 382
Undergraduate: CSC 224 and 6 hours of elective credit
OR CSC 211 and CSC 212 and 2 hours of elective credit
- Modern Information Technology Program, IPD 344
Undergraduate: 2 hours of elective credit
- Modern .NET Web Development Program, IPD 342
Undergraduate: 4 hours of elective credit
- Technology and Innovation Program, IPD 345
Undergraduate: 4 hours of elective credit
- SQL Server Business Intelligence Program
IPD 360 (undergraduate level): 4 hours of elective credit
- SQL Server Database Administration Program
IPD 363 (undergraduate level): 6 hours of elective credit
- Web Development with JavaScript and HTML5 Program, IPD 356
(formerly Web Development with Ajax Technologies Program)
Undergraduate: 4 hours of elective credit