<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
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<tr>
<td>IPD 230</td>
<td>THINKING THROUGH MAKING PROGRAM</td>
<td>0</td>
<td>Undergraduate</td>
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<tr>
<td>IPD 231</td>
<td>IOS DEVELOPER PROGRAM</td>
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<tr>
<td>IPD 232</td>
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**IPD 230 | THINKING THROUGH MAKING PROGRAM | 0 quarter hours (Undergraduate)**
A 13-week professional development workshop applying problem-solving and maker-centric skills toward building physical systems using an array of fundamental skills.

**IPD 231 | IOS DEVELOPER PROGRAM | 0 quarter hours (Undergraduate)**
A 10-week certificate program covering iOS development for IT professionals and software developers. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

**IPD 232 | FUNDAMENTALS OF R PROGRAM | 0 quarter hours (Undergraduate)**
A 6-week certificate program covering R language basics, packages and development environments. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

**IPD 233 | FUNDAMENTALS OF SOFTWARE TESTING PROGRAM | 0 quarter hours (Undergraduate)**
A 6-week certificate program covering software testing strategies and tools for software test automation. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

**IPD 234 | CYBERSECURITY RISK MANAGEMENT PROGRAM | 0 quarter hours (Undergraduate)**
In this 10-week certificate program, participants devise an operational cybersecurity risk management strategy using the NIST Cybersecurity Framework for a cyber-physical system or a technology of their choice. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

**IPD 235 | INCIDENT RESPONSE AND DIGITAL FORENSICS PROGRAM | 0 quarter hours (Undergraduate)**
An 8-week program covering the incident response life cycle, analysis methodology, and the handling of digital forensic evidence for cybersecurity personnel.

**IPD 236 | INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND DEEPER LEARNING PROGRAM | 0 quarter hours (Undergraduate)**
An 11-week certificate program designed for data scientists, analytics professionals, and other IT professionals who want to understand the fundamental principles of Artificial Intelligence and Deep Learning and be able to apply them to their business. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

**IPD 240 | ADVANCED PYTHON PROGRAM | 0 quarter hours (Undergraduate)**
A four-week certificate program covering principles of object-oriented design, design patterns, and meta-programming in the Python programming language. The program is designed for intermediate-level Python programmers. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on enrollment.

**IPD 241 | ARTIFICIAL INTELLIGENCE FOR ENTERPRISE PROGRAM | 0 quarter hours (Undergraduate)**
An 11-week certificate program designed for IT professionals and business decision-makers who want to learn the fundamentals of artificial intelligence and be able to apply them to their business. The program covers an introduction to artificial intelligence, cognitive analytics, natural language processing, knowledge engineering, digital voice assistant, image/video recognition, robotics process automation, and augmented reality. The program will also cover different APIs that are used in industry relating to cloud and mobile technologies. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on enrollment.

**IPD 242 | MACHINE LEARNING AND DEEP LEARNING PROGRAM | 0 quarter hours (Undergraduate)**
An 11-week certificate program covering machine learning, transfer learning, automated machine learning, and deep learning for data scientists, business analytics and other IT professionals. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on enrollment.

**IPD 243 | DATA VISUALIZATION WITH TABLEAU PROGRAM | 0 quarter hours (Undergraduate)**
An 11-week certificate program focusing on machine learning, transfer learning, automated machine learning, and deep learning for data scientists, business analytics and other IT professionals. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on enrollment.

**IPD 244 | ROBOTIC PROCESS AUTOMATION PROGRAM | 0 quarter hours (Undergraduate)**
An 11-week certificate program designed to help business and IT professionals understand how to accelerate efforts at transforming their businesses digitally using Robotic Process Automation (RPA). This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on enrollment.

**IPD 245 | DATA VISUALIZATION WITH TABLEAU PROGRAM | 0 quarter hours (Undergraduate)**
A 5-week certificate program geared towards business and data professionals who wish to get an in-depth working knowledge of Tableau. Students will learn Tableau fundamentals and gain competency in working with data in Tableau. The program will also cover core visualizations, dashboard design, and best practices for visualizations. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on enrollment.
IPD 246 | WEB SERIES DEVELOPMENT PROGRAM | 0 quarter hours
(Undergraduate)
This 5-week certificate program explores the process of development and
screenwriting of an independent short-form television series, otherwise
known as web series. It is taught, in Spanish, in a workshop format
based on the operation of a professional writers’ room. The focus is
pitching ideas, script development, and the revision of the different roles
that make the writers’ room a creative and dynamic environment. The
program is open to college students with a firm grasp of the Spanish
language, interested in the world of television. This program requires a
separate application for admission and $40 application fee. Please visit
IPD.CDM.DEPAUL.EDU for information on enrollment.

IPD 337 | ADVANCED DATA SCIENCE WITH PYTHON PROGRAM | 0
quarter hours
(Undergraduate)
An 11-week certificate program covering advanced data science
techniques using Python and how to apply them in different domains. This
program requires a separate application for admission and $40
application fee. Please visit IPD.CDM.DEPAUL.EDU for information on
enrollment.

IPD 338 | FUNDAMENTALS OF STATISTICS AND MACHINE LEARNING
USING R PROGRAM | 0 quarter hours
(Undergraduate)
A 10-week certificate program covering how to use R to apply
fundamentals of statistical analysis and machine learning. The program is
ideally suited for business professionals with basic statistical and
computer literacy. This program requires a separate application for
admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for
information on enrollment.

IPD 339 | AUTOMATED SOFTWARE TESTING PROGRAM | 0 quarter hours
(Undergraduate)
A 10-week certificate program covering software testing strategies and
tools and techniques for software test automation. The program is ideally
suited for technical professionals with some programming experience. This
program requires a separate application for admission and $40
application fee. Please visit IPD.CDM.DEPAUL.EDU for information on
enrollment.

IPD 341 | BIG DATA USING SPARK PROGRAM | 4 quarter hours
(Undergraduate)
An 11-week program covering Apache Spark and how it fits with Big Data. This
program requires a separate application for admission and $40
application fee. Please visit IPD.CDM.DEPAUL.EDU for information on
how to enroll.

IPD 342 | MODERN .NET WEB DEVELOPMENT PROGRAM | 4 quarter
hours
(Undergraduate)
A 10-week program for professional developers who wish to learn Web
applications development using the latest Microsoft .NET technologies. This
program requires a separate application for admission and $40
application fee. Please visit IPD.CDM.DEPAUL.EDU for information on
how to enroll.

IPD 343 | INTRODUCTION TO SQL PROGRAM | 1.5 quarter hours
(Undergraduate)
A 2-week program on the fundamentals of Structured Query Language. This
program requires a separate application for admission and $40
application fee. Please visit IPD.CDM.DEPAUL.EDU for information on
how to enroll.

IPD 344 | MODERN INFORMATION TECHNOLOGY PROGRAM | 2 quarter
hours
(Undergraduate)
An 11-week program providing instruction in coding and a hands-on
overview of key topics in modern computing and business applications.

IPD 345 | TECHNOLOGY AND INNOVATION | 4 quarter hours
(Undergraduate)
A 10-week program designed to be a comprehensive study of the
disciplines involved in the practical management of technology and
innovation.

IPD 346 | DATA SCIENCE FOR BUSINESS PROGRAM | 4 quarter hours
(Undergraduate)
A ten-week certificate program covering data science and Big Data
principles and techniques to support business decision-making. This
program requires a separate application for admission and $40
application fee. Please visit IPD.CDM.DEPAUL.EDU for information on
how to enroll.

IPD 347 | BIG DATA USING HADOOP PROGRAM | 4 quarter hours
(Undergraduate)
An 11-week certificate program covering the Apache Hadoop framework
and how it fits with Big Data. This program requires a separate
application for admission and $40 application fee. Please visit
IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 350 | IOS DEVELOPER PROGRAM | 10.00 quarter hours
(Undergraduate)
In this course, we introduce the core issues associated with development
for iOS mobile devices. Students learn a platform’s IDE, frameworks, view,
menu, controllers, graphics audio and more. Understanding the device’s
taps, touch, multi-touch, gestures, and accelerometers are just a few
of the interactions the class will cover. User data interactions, internet
conductivity, persistent storage and iCloud retrieval will be introduced.
The course is designed to introduce the basics for business mobile
applications.

IPD 351 | BIG DATA AND NOSQL PROGRAM | 4 quarter hours
(Undergraduate)
An 11-week certificate program covering popular NoSQL databases and
how they fit with Big Data. This program requires a separate
application for admission and $40 application fee. Please visit
IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 352 | IPV6 PROGRAM | 4 quarter hours
(Undergraduate)
A ten-week online certificate program providing comprehensive coverage
of IPv6 technologies and strategies for transitioning enterprise networks
to IPv6. This program requires a separate application for admission and
$40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on
how to enroll.

IPD 353 | CLOUD COMPUTING WITH AMAZON WEB SERVICES PROGRAM
| 4 quarter hours
(Undergraduate)
A 5-week program in cloud computing using the Amazon Web Services
platform.

IPD 354 | CLOUD COMPUTING INFRASTRUCTURE AND OPERATIONS
PROGRAM | 2.5 quarter hours
(Undergraduate)
A 6-week program in the architectures, infrastructure, and operations of
Cloud Computing (2.5 quarter hours)
IPD 355 | CLOUD COMPUTING TECHNOLOGIES PROGRAM | 4 quarter hours
(Undergraduate)
An 11-week certificate program in the principles, methods, and technologies of Cloud Computing. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 356 | WEB DEVELOPMENT WITH JAVASCRIPT AND HTML5 PROGRAM | 4 quarter hours
(Undergraduate)
An eight-week in-depth certificate program focused on user-centered Web development. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 357 | WIRELESS LAN SECURITY PROGRAM | 3 quarter hours
(Undergraduate)
An 8-week program covering the latest solutions to wireless LAN security issues. (3 quarter hours)

IPD 359 | WEB DEVELOPMENT WITH PYTHON PROGRAM | 2.5 quarter hours
(Undergraduate)
A five-week certificate program covering Web development with the Python programming language. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll. (2.5 quarter hours)

IPD 360 | SQL SERVER BUSINESS INTELLIGENCE PROGRAM | 4 quarter hours
(Undergraduate)
An 11-week in-depth certificate program covering database administration using Microsoft SQL Server. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 363 | SQL SERVER DATABASE ADMINISTRATION PROGRAM | 6 quarter hours
(Undergraduate)
An 11-week in-depth certificate program covering database administration using Microsoft SQL Server. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll. (6 quarter hours)

IPD 370 | ADVANCED SQL PROGRAM | 1.5 quarter hours
(Undergraduate)
A two-week certificate program covering advanced SQL. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll. (1.5 quarter hours)

IPD 382 | JAVA DEVELOPER PROGRAM | 10 quarter hours
(Undergraduate)
A ten-week comprehensive certificate program covering object-oriented applications development using Java for programmers. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll. (10 quarter hours)

IPD 440 | CAREER CHANGE PROGRAM | 0 quarter hours
(Graduate)
A 26-week certificate program for career changers in technology. The program requires a separate application for admission and $40 application fee. Enrollment is restricted. Please visit IPD.CDM.DEPAUL.EDU for admission information.

IPD 441 | BIG DATA USING SPARK PROGRAM | 4 quarter hours
(Graduate)
An 11-week program covering Apache Spark and how it fits with Big Data. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 442 | IPV6 PROGRAM | 4 quarter hours
(Graduate)
A ten-week online certificate program providing comprehensive coverage of IPv6 technologies and strategies for transitioning enterprise networks to IPv6. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 447 | BIG DATA USING HADOOP PROGRAM | 4 quarter hours
(Graduate)
A 11-week certificate program covering the Apache Hadoop framework and how it fits with Big Data. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 451 | BIG DATA AND NOSQL PROGRAM | 4 quarter hours
(Graduate)
A 11-week certificate program covering popular NoSQL databases and how they fit with Big Data. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 452 | IPV6 PROGRAM | 4 quarter hours
(Graduate)
A ten-week online certificate program providing comprehensive coverage of IPv6 technologies and strategies for transitioning enterprise networks to IPv6. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 460 | SQL SERVER BUSINESS INTELLIGENCE PROGRAM | 4 quarter hours
(Graduate)
An 11-week in-depth certificate program covering Microsoft SQL Server analysis services, integration services, and reporting services. This program requires a separate application for admission and $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 463 | SQL SERVER DATABASE ADMINISTRATION PROGRAM | 4 quarter hours
(Graduate)
An 11-week certificate program covering database administration using Microsoft SQL Server. This program requires a separate application for admission and a $40 application fee. Please visit IPD.CDM.DEPAUL.EDU for information on how to enroll.

IPD 500 | TASTE OF COMPUTING PROFESSIONAL DEVELOPMENT | 4.5 quarter hours
(Graduate)
The goals of this course are to: work collaboratively with peers to implement an inquiry-based curriculum in computer science; prepare to teach culturally-relevant foundational computing knowledge with concrete instructional strategies; and, develop a community of practice in the classroom with an interdisciplinary approach to problem-solving. (variable credit)