



# Catalog

Version 10

Published December 9<sup>th</sup>, 2019

Effective January 2020 to December 2020

---

14665 Midway Road, Ste. 220

Addison, TX 75001

1-(833)-DIVERGE



## TABLE OF CONTENTS

Mission Statement .....	6
Non-Discrimination Policy.....	6
History.....	6
Facilities.....	6
ADMISSIONS POLICIES .....	7
Enrollment Requirements and Enrollment Dates .....	7
Admission Procedure.....	8
Pre-work requirement for the following courses.....	10
Admissions Deadline.....	10
Foreign Transcript Evaluation .....	10
Policy for Granting Credits .....	10
Cancellation Policy .....	11
The Program Refund Policy.....	11
Refund Policy for Students Called To Active Military Service.....	13
Refund Policy for Seminars .....	15
Listing of Fees .....	16
ACADEMIC POLICIES .....	18
Homework.....	18
Hours .....	18
Standard of progress.....	18
Grading System.....	19
Attendance.....	20
Withdrawal Policy.....	20
Course Retake Policy .....	20
Leave of Absence.....	21
Attendance Probation.....	21
Student Conduct Requirements.....	22
Student Grievance Procedure .....	23
STUDENT ACTIVITIES AND SERVICES.....	24
Academic Counseling.....	24

Academic Advisement .....	24
Placement Services.....	24
Library and Learning Resources .....	24
General Conduct .....	25
<b>COURSE DESCRIPTIONS AND OBJECTIVES .....</b>	<b>26</b>
<b>DATA SCIENCE IMMERSIVE (PROGRAM).....</b>	<b>26</b>
Module Descriptions .....	26
Graduation Requirements.....	28
Grading System.....	29
<b>CYBERSECURITY CORE TECHNICAL.....</b>	<b>29</b>
Module Descriptions .....	30
Graduation Requirements.....	32
Grading System.....	33
<b>CYBERSECURITY PROFESSIONAL PENETRATION TESTER.....</b>	<b>33</b>
Module Descriptions .....	34
Graduation Requirements.....	36
Grading System.....	37
<b>CYBERSECURITY RISK MANAGEMENT.....</b>	<b>37</b>
Module Descriptions .....	39
Graduation Requirements.....	43
Grading System.....	44
<b>PYTHON FOR DATA ANALYSIS (SEMINAR).....</b>	<b>45</b>
<b>DATA SCIENCE (SEMINAR).....</b>	<b>46</b>
<b>DATA SCIENCE ADAPTIVE (SEMINAR).....</b>	<b>47</b>
<b>APPLIED BIG DATA ANALYTICS (SEMINAR).....</b>	<b>50</b>
<b>DEEP LEARNING (SEMINAR).....</b>	<b>53</b>
<b>R FOUNDATIONS (SEMINAR).....</b>	<b>54</b>
<b>EXECUTIVE DATA SCIENCE (SEMINAR).....</b>	<b>56</b>
<b>DATA SCIENCE FOR PROCESS MINING (SEMINAR).....</b>	<b>57</b>
<b>CLOUD COMPUTING CONSULTANT (SEMINAR).....</b>	<b>59</b>
<b>DEVOPS ENGINEERING CONSULTANT (SEMINAR).....</b>	<b>61</b>

ETHICAL HACKING AND COUNTERMEASURES.....	62
NETWORKING AND SECURITY FOUNDATIONS.....	64
NETWORK PENTESTING AND EXPLOITATION .....	66
WIRELESS PENTESTING AND EXPLOITATION .....	66
PYTHON FOR PENTESTING.....	67
POWERSHELL FOR PENTESTING .....	69
PACKET ANALYSIS WITH WIRESHARK.....	70
COMPETING IN CAPTURE THE FLAG EVENTS.....	71
ENTERPRISE MACHINE LEARNING (SEMINAR) .....	72
Office Hours .....	74
Class Hours .....	74
Class Schedules .....	74
Holidays 2020 .....	74
Ownership.....	75
Administrative Control.....	75

### *Mission Statement*

Divergence Academy is an institution for students with an enthusiasm for advanced computing, Our mission is to empower our student body to be able to use statistics, advanced computing, data engineering, and the scientific method to unlock the true promise of data. We are committed assisting students achieve their goal of a career in the field of data science and data engineering by providing quality career education.

### *Non-Discrimination Policy*

Divergence Academy is non-sectarian and does not discriminate with regard to race, creed, color, national origin, age, sex, disability or marital status in any of its academic program activities, employment practices, or admissions policies.

This policy applies to hiring of all positions and admission of all students into all programs. Students with special needs such as physical or mental handicaps or learning disabilities are considered for admission provided they meet the entrance requirements. The Chief Academic Officer is responsible for accepting students and determining whether applicants, including those with special needs, can benefit from the training.

### *History*

The Divergence Academy was started in 2015 in Addison, Texas by Sangeeta Ankaraju and Sravan Ankaraju. The Divergence Academy is **Approved and Regulated by the Texas Workforce Commission, Career Schools and Colleges, Austin, Texas.**

### *Facilities*

All class sessions are held at the main Divergence Academy campus located at 14665 Midway Road Ste. 220 Addison, TX 75001 between Belt Line Rd and Spring Valley Rd one mile east of the Dallas North Tollway.

The area of the school is approximately 9394 sq. ft. with a front entrance and back entrance. This space is divided into a reception area, one large conference room, five offices, and large rooms dividable into four classrooms using partitions. Restrooms are available. Student and faculty lounge areas are available for relaxation purposes. The facilities have adequate lighting, are air-conditioned and wheelchair accessible. Free ample student parking (including handicapped) is available around the building. Students receive instruction on school owned equipment, hardware and software. Student can bring in their laptop and connect to our school's online services. Our classroom is equipment with the latest in computer technology. The facility and equipment used fully comply with all federal, state and local ordinances and regulations, including requirements for fire safety, building safety, handicapped access and health.

Students receive instruction on institute owned equipment, hardware and software. The facility and equipment used fully comply with all federal, state and local ordinances and regulations, including requirements for fire safety, building safety, handicapped access and health.

## **ADMISSIONS POLICIES**

Potential applicants should contact Divergence Academy by visiting the institution and meeting with an Admissions Representative. The representative will give a tour of the campus, provide detailed information of the institution's programs and policies, discuss the applicant's qualifications, and assist them in determining the best way to meet their career objectives.

### *Enrollment Requirements and Enrollment Dates*

Admission into any Divergence Academy course requires that the student have a high school diploma or equivalent (General Education Diploma – GED) or a diploma from an institution of higher education accredited by an accrediting association recognized by the U.S. Department of Education. Divergence Academy does not admit ability-to-benefit students.

### *Required Equipment*

All Divergence Academy students are required to have access to a laptop to bring to each class session. For most courses, Windows laptops are preferred but not required as instructors will be using Windows laptops and may not be able to provide much support with certain technical issues to students using Mac laptops.

### *Admission Procedure*

Our admissions process comprises of 5 steps and is designed to elicit core traits that we've seen help students' success in and after the program:

#### **STEP 1**

Submit an application. Divergence Academy will review and...

#### **STEP 2**

Move forward with select applicants to an admissions interview. The interview usually lasts about two hours. During that time, the admission representative will discuss the various aspects of the training programs offered, tuition, financing, and the pre-admission work requirements. In addition, Divergence Academy will also seek to understand the applicant's technical background to determine desire, ability and commitment and answer any questions that they may have before starting in the program. If qualified, applicants may complete the enrollment agreement, or they may return to enroll later. After the enrollment agreement is completed, the applicant then moves on to ...

#### **STEP 3**

Pre-admission work (if applicable to the course of interest), and...

#### **STEP 4:**

A date is set to interview with alumni or instructors (if applicable to the course of interest). During the interview, Divergence may ask the applicant some logic questions, discuss the pre-admission work completed, or ask to describe or demonstrate skills covered in pre-admission work assignments.



**STEP 5:**

Once the applicant completes all the requisite steps in the process, they will receive confirmation of admission from admissions representative.

**STEP 6:**

Execution of Enrollment Agreement along with \$1000 tuition deposit.

Each prospective student must provide documentation of prior education documentation as outlined in the Admission Policy for the course of interest and, as applicable, documentation of the following experience:

Coursed Offered	Admissions Requirements
Data Science Immersive	<ul style="list-style-type: none"><li>• Exposure to programming</li><li>• Understanding of Statistics and Probability determined based on admissions interview</li></ul>
Cybersecurity Core Technical	<ul style="list-style-type: none"><li>• Proven motivation based on an admission interview</li><li>• Demonstrated interest in technology fields</li><li>• Understanding of general tools and practices used in the industry</li></ul>
Cybersecurity Professional Penetration Tester	<ul style="list-style-type: none"><li>• Demonstrated knowledge of Networking and Security based on an admission interview</li><li>• Understanding of general tools and practices used in the industry</li></ul>
Cybersecurity Risk Management	<ul style="list-style-type: none"><li>• Demonstrated knowledge of Networking and Security based on an admissions interview</li><li>• Minimum of 5 years cumulative paid full-time work experience in 2 or more domains of the CISSP Core Body of Knowledge (CBK)</li><li>• Understanding of general project management principles</li></ul>

### *Pre-work requirement for the following courses*

- Data Science Immersive: Divergence Academy's pre-work is up to 50 hours of work that students receive after they've been accepted and enrolled in the program. It is designed to introduce students to the topics that they'll touch upon again during the program. The completion of the pre-work is mandatory and ensures a baseline level of knowledge in each class. Mastery of each subject is not expected but the hope is that the student will become excited by what they uncover and dig further.

If a student is unable to complete the work prior to the first day of the course and seeks to cancel enrollment, he or she should refer to the Cancellation Policy.

### *Admissions Deadline*

For all courses, the admissions deadline is 24 hours before the first meeting of the course. The only exception is in the case of re-enrollment. If an admitted student requests to enroll in a different session before the class starts, an approval may be granted pending availability.

### *Foreign Transcript Evaluation*

All foreign transcripts and degrees must be evaluated and translated to meet U.S. equivalency.

### *Policy for Granting Credits*

Divergence Academy does not have articulation agreements in place with any other institutions at the time and does not accept the transfer credit from other institutions.

The transferability of credits you earn at Divergence Academy is at the complete discretion of an institution to which you may seek to transfer. Acceptance of the credits you earn at Divergence Academy is also at the complete discretion of the institution to which you may seek to transfer. If the credits that you earn at Divergence Academy are not accepted at the institution to which you seek to transfer, you may be required to repeat some or all of your coursework at that institution. For this reason, you should make certain that your attendance at Divergence Academy will meet your educational goals. This may include contacting an institution to which you may seek to transfer after attending Divergence Academy to determine if your credits will transfer. Divergence Academy does not recognize acquired life experience and prior experiential learning as a consideration for enrollment or granting credit towards any of its certificate programs.

### *Cancellation Policy*

A full refund will be made to any student who –

- Cancels the enrollment contract within 72 hours (until midnight of the third day excluding Saturdays, Sundays and legal holidays) after the enrollment agreement is signed.
- Cancels enrollment within the student’s first three scheduled class days, except that the school may retain not more than \$100 in any administrative fees charged, as well as items of extra expense that are necessary for the portion of the program attended and stated separately on the enrollment agreement.
- Withdraws before or at the end of Phase-0 (Ignition) of the program by emailing to [phase0@divergence.acaemy](mailto:phase0@divergence.acaemy).

### *The Program Refund Policy*

1. Refund computations will be based on scheduled course time of class attendance through the last date of attendance. Leaves of absence, suspensions and school holidays will not be counted as part of the scheduled class attendance.
2. The effective date of termination for refund purposes will be the earliest of the following:

- (a) The last day of attendance, if the student is terminated by the school;
  - (b) The date of receipt of written notice from the student; or
  - (c) Ten school days following the last date of attendance.
3. If tuition and fees are collected in advance of entrance, and if after expiration of the 72-hour cancellation privilege the student does not enter school, not more than \$100 in any administrative fees charged shall be retained by the school for the entire residence program or synchronous distance education course.
  4. If a student enters a residence or synchronous distance education program and withdraws or is otherwise terminated after the cancellation period but before or at the end of Phase-O (Ignition) of the program, the school may not retain more than \$100 in any administrative fees charged for the entire program.
  5. If a student enters a residence or synchronous distance education program and withdraws or is otherwise terminated after the cancellation period, the school may not retain more than \$100 in any administrative fees charged for the entire program. The minimum refund of the remaining tuition and fees will be the pro rata portion of tuition, fees, and other charges that the number of hours remaining in the portion of the course or program for which the student has been charged after the effective date of termination bears to the total number of hours in the portion of the course or program for which the student has been charged, except that a student may not collect a refund if the student has completed 50 percent or more of the total number of hours in the portion of the program for which the student has been charged on the effective date of termination.
  6. Refunds for items of extra expense to the student, such as books, tools, or other supplies are to be handled separately from refund of tuition and other academic fees. The student will not be required to purchase instructional supplies, books and tools until such time as these materials are required. Once these materials are purchased, no refund will be made. For full refunds, the school can withhold costs for these types of items from the refund as long as they were necessary for the portion of the program attended and separately stated in the enrollment agreement. Any such items not required for the portion of the program attended must be included in the refund.

7. A student who withdraws for a reason unrelated to the student’s academic status after the 50 percent completion mark and requests a grade at the time of withdrawal shall be given a grade of “incomplete” and permitted to re-enroll in the course or program during the 12-month period following the date the student withdrew without payment of additional tuition for that portion of the course or program.
8. A full refund of all tuition and fees is due and refundable in each of the following cases:
  - a) An enrollee is not accepted by the school;
  - b) If the course of instruction is discontinued by the school and this prevents the student from completing the course; or
  - c) If the student’s enrollment was procured as a result of any misrepresentation in advertising, promotional materials of the school, or representations by the owner or representatives of the school.

*Refund Policy for Students Called To Active Military Service*

(In Accordance with VA Regulation 21.4255-1)

Students not accepted by the school and students who cancel the contract by notifying the school within three business days are entitled to a full refund of all tuition and fees paid. If any student withdraws after three business days, but before commencement of classes, he/she will be entitled to a full refund of all tuition and fees paid including the registration fee in excess of \$100.

In the case of students withdrawing after commencement of classes, the school will retain a cancellation fee plus a percentage of the tuition and fees, which is based on the percentage of contact hours attended, as described in the table below. The refund is based on the last day of recorded attendance.

<i>Refund to which a student is entitled upon termination or withdrawal:</i>	
10% of program completed	90% less cancellation charge

20% of program completed	80% less cancellation charge
30% of program completed	70% less cancellation charge
40% of program completed	60% less cancellation charge
50% of program completed	50% less cancellation charge
60% of program completed	40% less cancellation charge
70% of program completed	30% less cancellation charge
80% of program completed	20% less cancellation charge
90% of program completed	10% Refunded

8. A student of the school or college who withdraws from the school or college as a result of the student being called to active duty in a military service of the United States or the Texas National Guard may elect one of the following options for each program in which the student is enrolled:
- (a) If tuition and fees are collected in advance of the withdrawal, a pro rata refund of any tuition, fees, or other charges paid by the student for the program and a cancellation of any unpaid tuition, fees, or other charges owed by the student for the portion of the program the student does not complete following withdrawal;
  - (b) A grade of incomplete with the designation "withdrawn-military" for the courses in the program, other than courses for which the student has previously received a grade on the student's transcript, and the right to re-enroll in the program, or a substantially equivalent program if that program is no longer available, not later than the first anniversary of the date the student is discharged from active military duty without payment of additional tuition, fees, or other charges for the program other than any previously unpaid balance of the original tuition, fees, and charges for books for the program; or
  - (c) The assignment of an appropriate final grade or credit for the courses in the program, but only if the instructor or instructors of the program determine that the student has:
    - (1) satisfactorily completed at least 90 percent of the required coursework for the program; and
    - (2) demonstrated sufficient mastery of the program material to receive credit for completing the program.

9. The payment of refunds will be totally completed such that the refund instrument has been negotiated or credited into the proper account(s), within 60 days after the effective date of termination.

#### *Refund Policy for Seminars*

1. Refund computations will be based on the period of enrollment computed on basis of course time (clock hours).
2. The effective date of termination for refund purposes will be the earliest of the following:
  - (a) the last date of attendance; or
  - (b) the date of receipt of written notice from the student.
3. If tuition and fees are collected in advance of entrance, and the student does not enter school, not more than \$100 shall be retained by the school.
4. If the student fails to enter the seminar, withdraws, or is discontinued at any time before completion of the seminar, the student will be refunded the pro rata portion of tuition, fees, and other charges that the number of class hours remaining in the seminar after the effective date of termination bears to the total number of class hours in the seminar.
5. A full refund of all tuition and fees is due in each of the following cases:
  - (a) an enrollee is not accepted by the school;
  - (b) if the seminar of instruction is discontinued by the school and thus prevents the student from completing the seminar; or
  - (c) if the student's enrollment was procured as a result of any misrepresentation in advertising, promotional materials of the school, or misrepresentations by the owner or representatives of the school.
6. REFUND POLICY FOR STUDENTS CALLED TO ACTIVE MILITARY SERVICE.

A student of the school or college who withdraws from the school or college as a result of the student being called to active duty in a military service of the United States or the Texas National Guard may elect one of the following options for each program in which the student is enrolled:

- (a) if tuition and fees are collected in advance of the withdrawal, a pro rata refund of any tuition, fees, or other charges paid by the student for the program and a cancellation of any unpaid tuition, fees, or other charges owed by the student for the portion of the program the student does not complete following withdrawal;
- (b) a grade of incomplete with the designation "withdrawn-military" for the courses in the program, other than courses for which the student has previously received a grade on the student's transcript, and the right to re-enroll in the program, or a substantially equivalent program if that program is no longer available, not later than the first anniversary of the date the student is discharged from active military duty without payment of additional tuition, fees, or other charges for the program other than any previously unpaid balance of the original tuition, fees, and charges for books for the program; or
- (c) the assignment of an appropriate final grade or credit for the courses in the program, but only if the instructor or instructors of the program determine that the student has:
  - (1) satisfactorily completed at least 90 percent of the required coursework for the program; and
  - (2) demonstrated sufficient mastery of the program material to receive credit for completing the program.

7. Refunds will be totally consummated within 60 days after the effective date of termination.

*Listing of Fees*

Program of Study	Non-refundable Registration	Tuition	Books	Materials (included in tuition cost)	Total Cost
Data Science Immersive	\$150	\$16,850.00	\$0.00	\$0.00	\$17,000.00
Cybersecurity Core Technical	\$150	\$12,850.00	\$0.00	\$0.00	\$13,000.00



Cybersecurity Professional Penetration Tester	\$150	\$17,850.00	\$0.00	\$0.00	\$18,000.00
Cybersecurity Risk Management	\$150	\$17,850	\$0.00	\$0.00	\$18,000.00

Seminars	Registration	Tuition	Books	Materials (included in tuition cost)	Total Cost
Python for Data Analysis	\$0.00	\$2,500.00	\$0.00	\$0.00	\$2,500.00
Data Science	\$0.00	\$3,500	\$0.00	\$0.00	\$5,000.00
Data Science Adaptive	\$0.00	\$7,500	\$0.00	\$0.00	\$7,500.00
Applied Big Data Analytics	\$0.00	\$3,500	\$0.00	\$0.00	\$5,000.00
Deep Learning	\$0.00	\$3,500	\$0.00	\$0.00	\$5000.00
R Foundations	\$0.00	\$2,500	\$0.00	\$0.00	\$5,000.00
Executive Data Science	\$0.00	\$5,000	\$0.00	\$0.00	\$5,000.00
Data Science for Process Mining	\$0.00	\$5,000	#0.00	\$0.00	\$5,000.00
Cloud Computing Consultant	\$0.00	\$7,500	\$0.00	\$0.00	\$7,500.00
DevOps Engineering Consultant	\$0.00	\$7,500	\$0.00	\$0.00	\$7,500.00
Networking and Security Foundations	\$0.00	\$6,000	\$0.00	\$0.00	\$7,500.00
Network Pentesting and Exploitation	\$0.00	\$2,500	\$0.00	\$0.00	\$3,500.00
Wireless Pentesting and Exploitation	\$0.00	\$2,500	\$0.00	\$0.00	\$3,500.00
Python for Pentesting	\$0.00	\$2,500	\$0.00	\$0.00	\$3,500.00
Powershell for Pentesting	\$0.00	\$2,500	\$0.00	\$0.00	\$3,500.00
Packet Analysis with Wireshark	\$0.00	\$2,500	\$0.00	\$0.00	\$3,500.00
Ethical Hacking and Countermeasures	\$0.00	\$2,500	\$0.00	\$0.00	\$3,500.00
Competing in Capture the Flag Events	\$0.00	\$2,500	\$0.00	\$0.00	\$3,500.00
Enterprise Machine Learning	\$0.00	\$3,500	\$0.00	\$0.00	\$5,000.00

The academy does not offer classes on a cost-per-hour basis.

## ACADEMIC POLICIES

Divergence Academy's attendance policy approximates the expectations found in a work situation. It is essential that each student learns the discipline of regular and prompt attendance as well as the skills involved in the workplace. At the time the student moves from education and training into a career, employers will be very interested in dependability and punctuality. No matter how skilled the person, an employee is valuable only when present on the job.

### *Homework*

Students in some courses may be required to spend up to 20 hours outside of class per week working on homework/projects.

### *Hours*

Academic credit is measured in clock hours. One hour of instructional time is defined as a sixty-minute period.

### *Standard of progress*

Divergence Academy measures student progress through frequent assignments and in-depth projects. Students are graded on a pass/fail basis. To receive a passing grade, students must maintain satisfactory progress as follows:

1. Receive a passing grade on 80% of all assignments. Assignment is graded based on completion. To receive a passing grade on an assignment, students must complete 100% of the minimum tasks specified in that assignment.
2. Maintain consistent attendance as outlined in the Attendance section below. A passing grade in attendance will be given to students with no more than two or six absences, depending on the program.
3. Receive a passing grade on all course projects. Projects are graded on an A-F scale. A grade of a D and above is passing

Students are evaluated\* for progress towards completion at the following point:

Course Length	Evaluation Point
40 hours / 5 days	20 hours / 3 days
60 hours / 12 days	30 hours / 6 days
400 hours / 16 weeks	200 hours / 8 weeks
420 hours / 12 weeks	140 hours / 4 weeks

*\*Divergence Academy does not have a cumulative final test or examination required for the completion of any of the courses. Students are informally evaluated by instructors every two weeks.*

### *Grading System*

Grade	Definition
P (Pass)	Has satisfactorily met all minimum course requirements. A grade of Pass is equivalent to a grade of A-D.
F (Fail)	Has not satisfactorily met all minimum course requirements. A grade of Fail is equivalent to an F.
I (Incomplete)	An incomplete is provided if a faculty member gives an extension to a student to complete a course project. An extension can be granted for a maximum of 30 days from the last day of class. If a student is not able to complete his/her project within this amount of time, he/she will be given an F. A student who is obligated for the full tuition may request a grade of "incomplete" if the student withdraws for an appropriate reason unrelated to the student's academic status. The student may re-enroll in the program during the 12-month period following the date the student withdraws and complete those incomplete subjects without payment of additional tuition. Students may finish their course with re-enrollment from admissions

### *Attendance*

The faculty and staff of Divergence Academy consider each moment in class imperative for success. When the student is not in the classroom, the information missed cannot be recaptured. Students who are excessively absent (25% or more of classroom hours) will be placed on probation without notice. If the student's attendance does not improve, the student will be dropped from the program. Students will not be readmitted without approval of the primary instructor and Chief of Academic Officer. If a student is absent for a test he/she will be given an opportunity to retest at the earliest convenience of the instructor. Makeup classes may be required at the discretion of the instructor and with approval of the Chief Academic Officer.

### *Withdrawal Policy*

Any student who withdraws from the program is subject to all accrued charges. All calculations will be based on the approved Refund Policy provided by the Texas Workforce Commission Career Schools and Colleges.

### *Course Retake Policy*

- ✓ Any enrolled student that fails a subject may repeat that subject free of cost one time only. Any student that fails a subject cannot proceed with the course until that subject is passed. If any single subject is failed twice the student must repeat the entire course and is required to re-enroll. In the case that a student passes a repeat subject but fails another subject that student must repeat the failed subject in order to continue the course but will be charged a fee of \$10 per clock hour of the failed subject.
- ✓ A student repeating a subject may not re-enroll before the next grading period.
- ✓ Students who fail a course and choose not to re-enroll are subject to the conditions outlined within the Refund Policy.

### *Leave of Absence*

Any student, for a good cause, may take a leave of absence. Students will be subject to the refund policy or upon return will be given credit according to the granting credit policy. LOA's will be authorized in thirty (30) day intervals. A maximum of sixty days will be authorized after which the student will be terminated and must re-apply in order to begin classes again.

### *Attendance Probation*

At least once a week, the Chief Academic Officer monitors the student attendance cards of all active students and calls those students that have missed one or two days during that week.

1. Perfect attendance is desired from each student; but 75% attendance average is mandatory.
2. A student must attend a minimum of 75% of the scheduled course. If a student does not attend at least 75%, the student will be dropped, and is subject to the Refund Policy.
3. Tardiness - every student is responsible for obtaining missed information due to tardiness. A student will be expelled after missing 25% of the scheduled clock hours due to tardiness and subject to the refund policy. If a student fails a subject due to tardiness that student is subject to the refund or repeat subject policies.
4. If expelled for unsatisfactory attendance or tardiness you may not reenroll before the start of the next grading period.
5. No makeup work will be granted - only tutoring.
6. If a student is dismissed due to tardiness or not attending a minimum of 75% of the scheduled course and wants to re-enroll the student must:
  - a. Write a letter requesting re-enrollment &
  - b. Must speak to the Director to get approval for re-enrollment.

## *Student Conduct Requirements*

Students are expected to dress and act properly while attending classes. At the discretion of the institute administration, a student may be dismissed from institute for a serious incident or repeated incidents of an intoxicated or drugged state of behavior, possession of drugs or alcohol upon institute premises, possession of weapons upon institute premises, behavior creating a safety hazard to other persons at institute, disobedient or disrespectful behavior to other students, an administrator, or faculty member, or any other stated or determined infractions of conduct.

1. Perfect attendance is desired from each student, but 75% overall attendance average is mandatory.
2. If the student does not attend at least 75% of the course, the student will be dismissed, and is subject to the refund or granting credit policies.
3. Tardiness – every student is responsible for obtaining missed information due to tardiness. You will be responsible for any missed work.
4. A student will be expelled after missing 25% of the schedule clock hours due to tardiness or absences.
5. If expelled for unsatisfactory attendance or tardiness you must reenroll. You may not reenroll before the start of the next class start date. If the student wishes to re-enroll the student must.
  - a. Write a letter requesting re-enrollment &
  - b. Must speak to the School Director to obtain approval for re-enrollment.
6. No makeup work will be granted - only tutoring.
7. Leave of Absence is available to all students. You must have a good cause. The student will be responsible for complying with the school's Refund and Previous Credit policies.
8. Cheating of any kind will not be tolerated. This will result in the student's dismissal from the course. Student will be eligible to reenroll after a conference with the Director has been completed.
9. Students are required to be on time and prepared for class every day.

10. Disruptive behavior of any kind is unacceptable. The student will be given three warnings, one verbal and two written if their behavior continues to not meet the standard the student will be terminated and may not remain in class. Re-enrollment policies will apply.
11. SEXUAL HARASSMENT OF ANY KIND, WEAPONS OF ANY KIND, AND BEING UNDER THE INFLUENCE OF ANY SUBSTANCE WILL NOT BE TOLERATED. ANY STUDENT VIOLATING THIS RULE WILL BE TERMINATED AND CANNOT RE-ENROLL.

### *Student Grievance Procedure*

1. All students are encouraged to voice or write their grievance/complaint to their instructor and/or the Director at any time.
2. If the student's grievance/complaint cannot be resolved, the student will be given the opportunity to place their grievance/complaint in writing. A form will be provided and must be requested from the front office.
3. Any grievance/complaint can be submitted at any time.
4. Or if their grievance/complaint is not resolved the student has the option to submit their grievance/complaint to the state for review.
5. A record of any and all grievance/complaint will be kept confidential and in the student's permanent file, whether voiced or written.

**Texas Workforce Commission**  
**Career Schools and Colleges Room 226T**  
**101 East 15th Street**  
**Austin, Texas 78778-0001**  
**Phone: (512) 936-3100**  
[texasworkforce.org/careerschools](http://texasworkforce.org/careerschools)

## STUDENT ACTIVITIES AND SERVICES

Divergence Academy offers student activities and services that enhance the student's learning experience as well as assists students to prepare for employment. Students enrolled in the certificate program are provided with the following services:

### *Academic Counseling*

Students are advised on both personal and academic issues and are encouraged to discuss their scholastic and vocational goals. The faculty and Chief Academic Officer have a sincere interest in the personal welfare of each student and therefore an open-door policy is employed.

### *Academic Advisement*

The course requirements are clearly presented in the institution's catalog. It is the student's responsibility to coordinate any make-up work if the student cannot comply with the chosen program of the student and any alteration to any program offered by school has to be preauthorized by the Chief Academic Officer.

### *Placement Services*

Divergence Academy does not guarantee employment for its graduates. The graduate services staff assists students in their job searches after they have successfully completed their studies, by offering information on job opportunities and temporary assignments and guidance in resume preparation and interviewing techniques. The institution makes reasonable efforts to satisfy the wishes of a graduate as to location and type of employment. The more flexible a graduate can be regarding initial employment, the easier it is for the school to assist in the placement process.

### *Library and Learning Resources*



Divergence Academy has established a library and resource center consisting of textbooks and periodicals providing information in the various materials to support the school's mission and curriculum and assists each student to attain his/her educational goals. The collection includes books, an assortment of current periodicals, and videos. The library, which provides academic assistance to students, is open from 9:00 a.m. to 7:00 p.m. Monday through Thursday and 9:00 a.m. to 5:00 p.m. on Fridays.

### *General Conduct*

Students are expected to comply with institute policy regarding curriculum, testing, absences, tardiness and makeup work while displaying courtesy and consideration towards instructors, staff and other students. Divergence Academy defines improper conduct as the following: fighting on campus; destruction, abuse or theft of property; the use or sale of alcohol or illegal drugs on campus; sexual misconduct; and disregard for institute policy. Improper conduct is cause for suspension or expulsion.

# COURSE DESCRIPTIONS AND OBJECTIVES

## DATA SCIENCE IMMERSIVE (PROGRAM)

Learning from data to gain useful predictions and insights. This program introduces methods for five key facets of an investigation: data wrangling, cleaning, and sampling to get a suitable data set; data management to be able to access big data quickly and reliably; exploratory data analysis to generate hypotheses and intuition; prediction based on statistical methods such as regression and classification; and communication of results through visualization, stories, and interpretable summaries.

Length of Program: 400 clock hours

Course Number	Course Title	Lecture	Lab	Ext	Total
DSI-001	MODELING FOR INSIGHTS	80	80	0	160
DSI-002	MODELING FOR PREDICTION	60	60	0	120
DSI-003	SCALING FOR ANALYTICS	40	40	0	80
DSI-004	CAPSTONE PROJECTS	10	70	0	80
TOTAL		200	200	0	400

*The approximate time required to complete the program is 10 weeks duration for the full-time day; or 20 weeks duration for four evenings and two days per weekend program.*

### *Module Descriptions*

#### **DSI-001**

#### **MODELING FOR INSIGHTS**

*Subject Hours:* 160 course time hours (80 hours lecture, 80 hours lab)

*Prerequisites:* Acceptance into the program

*Subject Description:* Master data preparation, data modeling and data visualization techniques using Structured Query Language (SQL), Power Query, and Power BI. Additionally, students will also be introduced to the Cognitive Application Programming Interfaces (API) to handle integration of Vision, Text,

and Speech datasets. Exploratory data analysis is another area that students will learn to generate hypotheses and intuition, and communicate results through visualization, stories, and summaries.

## **DSI-002**

### **MODELING FOR PREDICTION**

*Subject Hours:* 120 course time hours (60 hours lecture, 60 hours lab)

*Prerequisites:* DSJ-001

*Subject Description:* Python programming language will be used for model lifecycle – from specification, fit, and accuracy thru reliability; apply feature selection methods, finding “optimal” model parameters based on data. The fundamentals concepts of machine learning will be introduced to ensure that students choose right algorithms by applying tradeoff techniques - Bias-variance, and Precision-Recall – on both structured and unstructured data (primarily text and timeseries). Other techniques include application of feature selection methods such as – Filtering and wrapping algorithms; Dimensionality reduction of predictor space and graphing algorithms for clustering.

## **DSI-003**

### **SCALING FOR ANALYTICS**

*Subject Hours:* 120 course time hours (60 hours lecture, 60 hours lab)

*Prerequisites:* DSI-002

*Subject Description:* Use Apache Spark ecosystem in the cloud for preprocessing; and exploratory data analysis and pipeline development to build and deploy Machine Learning models.

## **DSI-004**

### **CAPSTONE PROJECTS**

*Subject Hours:* 80 course time hours (10 hours lecture, 70 hours lab)

*Prerequisites:* DSI-003

*Subject Description:* This module integrates Data Science skills through an application to a project focusing on real-world open data. The course serves as the capstone of the student’s 8-weeks of learning. The student works alone with support from staff to tailor the data science process steps to develop a minimum viable data product within two weeks. The student will be evaluated on their problem hypothesis, statistical model, insights delivered through use of the model, flexibility of the model including

bias and variance, and communication of the end-to-end approach through an oral presentation. In addition, during this module, students will develop an effective LinkedIn Profile, showcase project portfolio, prepare for interviews by revisiting their Toy Problems, and share their Capstone project results.

### *Graduation Requirements*

To qualify for graduation and successfully complete the Data Science Immersive, students should meet the attendance requirements, meet the minimum technical competency, and participate in the Career Services program.

- **Attendance:** Students are required to attend at least 85% of total class hours all- inclusive (excused and unexcused absences combined.) Students must not exceed 6 unexcused absences throughout the course, or 5% of total class time.
- **Technical Competency:** Receive a passing grade on 80% of all assignments. Assignment is graded based on completion. To receive a passing grade on an assignment, students must complete 100% of the minimum tasks specified in that assignment.
- **Career Services Program:** Students are required to complete all relevant activities in the Career Services Program which could include tasks such as completing a resume and online profile, conducting mock interviews and phone screens with Divergence Academy staff and delivering a capstone project proposal to the lead instructor.
- **Delivery of Capstone Project:** To attain a Complete graduation status, a student must deliver a capstone project approved by Lead Instructor. Receive a passing grade on all course projects. Projects are graded on an A-F scale. A grade of a D and above is passing

Students are also required to fulfill all financial obligations to Divergence Academy before they graduate.

Graduates will receive a certificate of completion.

### *Occupation(s) for which training will be provided:*

1. Entry-level Data Scientist and Data Analyst positions.
2. Main job-skills students will learn: Apply Python Programming language, Machine Learning, Linear Algebra and Probability for building Recommendation systems, and Time-series applications.

3. Different work settings in which program graduates may work: Graduates will work in professional business setting where they will interact with marketing, advertising, sales, IT and product development teams. Graduates will also work with other Data Scientists and Data Analysts to collaborate on hypothesis and testing. Graduates will also interact with their supervisors to provide status updates about their projects.

### *Grading System*

<b>Grade</b>	<b>Definition</b>
P (Pass)	Has satisfactorily met all minimum course requirements. A grade of Pass is equivalent to a grade of A-D.
F (Fail)	Has not satisfactorily met all minimum course requirements. A grade of Fail is equivalent to an F.
I (Incomplete)	An incomplete is provided if a faculty member gives an extension to a student to complete a course project. An extension can be granted for a maximum of 30 days from the last day of class. If a student is not able to complete his/her project within this amount of time, he/she will be given an F. A student who is obligated for the full tuition may request a grade of “incomplete” if the student withdraws for an appropriate reason unrelated to the student’s academic status. The student may re-enroll in the program during the 12-month period following the date the student withdraws and complete those incomplete subjects without payment of additional tuition. Students may finish their course with re-enrollment from admissions

## **CYBERSECURITY CORE TECHNICAL**

The ideal cyber security candidate has a mixture of technical and soft skills. On the technical side, most employers want proof that are 1) Grounded in IT fundamentals: e.g. networking, systems administration,

database management, web applications, etc. and 2) Versed in day-to-day operations: e.g. physical security, networks, server equipment, enterprise storage, users, applications, etc. This course prepares people who come from all angles – math, computer science, even history or philosophy. Because it's impossible to be an expert in all categories, this course prepares students focus on an area (e.g. networking security) and do it well. Thinking ahead 5-10 years to an “ultimate security career” the sample career paths will include – 1) Exchange administrator → Email security 2) Network administrator → Network security, forensics, etc. 3) System administrator → Security administrator, forensics, etc. and 4) Web developer → Web security, security software developer, etc.

Length of Program: 400 clock hours

Module Number	Module Title	Lecture	Lab	Ext	Total
CCT-001	IT INFRASTRUCTURE MANAGEMENT	60	40	0	100
CCT-002	NETWORKING ESSENTIALS	40	60	0	100
CCT-003	LINUX FUNDAMENTALS	40	60	0	100
CCT-004	CLOUD ESSENTIALS	40	60	0	100

*The approximate time required to complete the program is 10 weeks (40 hours/week) for the full-time day or 20 weeks for the evening or a two days per weekend program.*

### *Module Descriptions*

#### **CCT-001**

##### IT INFRASTRUCTURE MANAGEMENT

*Subject Hours:* 100 hours (60 hours lecture, 40 hours lab)

*Prerequisites:* Acceptance into the program

*Subject Description:* Students will learn baseline security skills; configure device operating systems, including Windows, Mac, Linux, Chrome OS, Android and iOS and administer client-based as well as cloud-based (SaaS) software; troubleshoot and problem solve core service and support challenges while

applying best practices for documentation, change management, and scripting; support basic IT infrastructure and networking; configure and support PC, mobile and IoT device hardware; implement basic data backup and recovery methods and apply data storage and management best practices.

## **CCT-002**

### NETWORKING ESSENTIALS

*Subject Hours:* 100 hours (40 hours lecture, 60 hours lab)

*Prerequisites:* CCT-001: IT INFRASTRUCTURE MANAGEMENT

*Subject Description:* Students will learn to design and implement functional networks; configure, manage, and maintain essential network devices; use devices such as switches and routers to segment network traffic and create resilient networks; identify benefits and drawbacks of existing network configurations; implement network security, standards, and protocols; troubleshoot network problems, and support the creation of virtualized networks

## **CCT-003**

### LINUX FUNDAMENTALS

*Subject Hours:* (40 hours lecture, 60 hours lab)

*Prerequisites:* CCT-002: NETWORKING ESSENTIALS

*Subject Description:* Students will receive hands-on experience configuring, monitoring, and supporting servers running the Linux operating system. The additional topics include security, kernel modules, storage & visualization, device management at an enterprise level, git & automation, networking & firewalls, server side & command line, server (vs. client-based) coverage, and troubleshooting.

## **CCT-004**

### CLOUD ESSENTIALS

*Subject Hours:* (40 hours lecture, 60 hours lab)

*Prerequisites:* CCT-003: LINUX FUNDAMENTALS

*Subject Description:* Students will learn to incorporate and manage cloud technologies as part of broader systems operations; learn to weave together solutions that meet specific business needs and

work in a variety of different industries; apply new cloud-based technologies to support to run mission critical systems, now that hybrid and multi-cloud have become the norm.

### *Graduation Requirements*

Divergence Academy measures student progress through frequent assignments, Midterm exam, Final exam, quizzes, class attendance/participation and in-depth projects/presentations. Students are graded on a pass/fail basis. To receive a passing grade, students must maintain satisfactory progress as follows:

1. Receive a passing grade on 80% of all assignments. Assignment is graded based on completion. To receive a passing grade on an assignment, students must complete 100% of the minimum tasks specified in that assignment.
2. Maintain consistent attendance as outlined in the Attendance section. A passing grade in attendance will be given to students with no more than two or four absences, depending on the program.
3. Receive a passing grade on all course projects. Labs and Assessments are graded on an A-F scale. A grade of a D and above is passing.
4. Technical Competency: Receive a passing grade on 80% of all assignments. Assignment is graded based on completion. To receive a passing grade on an assignment, students must complete 100% of the minimum tasks specified in that assignment.

Students are also required to fulfill all financial obligations to Divergence Academy before they graduate.

Graduates will receive a certificate of completion.

### *Occupation(s) for which training will be provided:*

1. Entry-level Exchange administrator, Network administrator, System administrator and Web developer
2. Main job-skills students will learn: Networking and Security skills.



3. Different work settings in which program graduates may work: Graduates will work in professional business setting where they will interact with IT and product development teams. Graduates will also interact with their supervisors to provide status updates about their projects.

### *Grading System*

Grade	Definition
P (Pass)	Has satisfactorily met all minimum course requirements. A grade of Pass is equivalent to a grade of A-D.
F (Fail)	Has not satisfactorily met all minimum course requirements. A grade of Fail is equivalent to an F.
I (Incomplete)	An incomplete is provided if a faculty member gives an extension to a student to complete a course project. An extension can be granted for a maximum of 30 days from the last day of class. If a student is not able to complete his/her project within this amount of time, he/she will be given an F. A student who is obligated for the full tuition may request a grade of “incomplete” if the student withdraws for an appropriate reason unrelated to the student’s academic status. The student may re-enroll in the program during the 12-month period following the date the student withdraws and complete those incomplete subjects without payment of additional tuition. Students may finish their course with re-enrollment from admissions

## **CYBERSECURITY PROFESSIONAL PENETRATION TESTER**

The course has been designed by Industry experts with in-depth experience in the Penetration Testing fields. Unlike other courses, this course focuses specifically on the knowledge and skills needed by a professional looking to lead or take part in a penetration test. We drill down into the latest technical knowledge, tools and techniques in key areas including Infrastructure, Web Application and Mobile security as well as Social Engineering. In addition, the course focuses on how to practically apply what

has been learned on current day-to-day penetration testing and does not expand on unrelated, dated or unnecessary theoretical concepts.

Length of Program: 400 clock hours

Module Number	Module Title	Lecture	Labs*	Ext	Total
CPPT-01	NETWORKING AND CLOUD FOUNDATIONS	60	60	0	120
CPPT-02	SECURITY AND LINUX ESSENTIALS	60	60	0	120
CPPT-03	SHELL SCRIPTING AND ETHICAL HACKING WITH COUNTERMEASURES	60	60	0	120
CPPT-04	COMPETING IN CAPTURE THE FLAG EVENTS	5	35	0	40

\*Labs consist of project workshop time to collaborate with peers or meet individually with instructors

*The approximate time required to complete the program is 10 weeks (40 hours/week) for the full-time day or 20 weeks for the night and two days per weekend program.*

### *Module Descriptions*

#### **MODULE-01**

##### NETWORKING AND CLOUD FOUNDATIONS

*Subject Hours:* 120 hours (60 hours lecture, 60 hours lab)

*Prerequisites:* Acceptance into the program

*Subject Description:* The Net+ and Cloud Practitioner certifications are generally the benchmark of most entry-level positions in Information Technology. This module is designed to help students obtain valuable knowledge that they can apply beyond the classroom and within the workplace. This accelerated module provides IT professionals with the understanding of hardware, networking and security skills, while providing the technical and performance-based expertise.

## **MODULE-02**

### **SECURITY AND LINUX ESSENTIALS**

*Subject Hours:* 120 hours (60 hours lecture, 60 hours lab)

*Prerequisites:* MODULE-02

*Subject Description:* The module focused on installation and configuration of systems to secure applications, networks, and devices; perform threat analysis and respond with appropriate mitigation techniques; participate in risk mitigation activities; and operate with an awareness of applicable policies, laws, and regulations. In addition, student learn the fundamental tools and concepts of Linux and Unix. Students gain proficiency using the command line. Beginners develop a solid foundation in Unix, while advanced users discover patterns and fill in gaps in their knowledge. Topics include basic file manipulation; basic and advanced filesystem features; I/O redirection and pipes; text manipulation and regular expressions; managing jobs and processes; vi, the standard Unix editor; automating tasks with shell scripts; managing software; secure remote administration; and more.

## **MODULE-03**

### **SHELL SCRIPTING AND ETHICAL HACKING WITH COUNTERMEASURES**

*Subject Hours:* 120 hours (60 hours lecture, 60 hours lab)

*Prerequisites:* MODULE-02

*Subject Description:* Ethical hacking is the process of testing and validating an Information Technology (IT) system to determine its weaknesses and assess its vulnerabilities. Businesses and government organizations hire cybersecurity professional to break past their online security systems so that they can recommend measures that help prevent data theft and fraud. Also known as penetration testers or information security analysts, ethical hackers identify potential threats and help mitigate the risk of a real cyber-attack. The purpose of this intermediate course is to help individuals master the core concepts of ethical hacking.

## **MODULE-04**

### **COMPETING IN CAPTURE THE FLAG EVENTS**

*Subject Hours:* 40 hours (5 hours lecture, 35 hours lab)

*Prerequisites:* MODULE-03

*Subject Description:* Computer security represents a challenge to education due to its interdisciplinary nature. Topics in computer security are drawn from areas ranging from theoretical aspects of computer science to applied aspects of information technology management. This makes it difficult to encapsulate the spirit of what constitutes a computer security professional. One approximation for this measure has emerged: the 'capture the flag' competition. Attack-oriented CTF competitions try to distill the essence of many aspects of professional computer security work into a single short exercise that is objectively measurable. The focus areas that CTF competitions tend to measure are vulnerability discovery, exploit creation, toolkit creation, and operational tradecraft.

### *Graduation Requirements*

Divergence Academy measures student progress through frequent assignments, Midterm exam, Final exam, quizzes, class attendance/participation and in-depth projects/presentations. Students are graded on a pass/fail basis. To receive a passing grade, students must maintain satisfactory progress as follows:

1. Receive a passing grade on 80% of all assignments. Assignment is graded on the basis of completion. To receive a passing grade on an assignment, students must complete 100% of the minimum tasks specified in that assignment.
2. Maintain 75% attendance as outlined in the Attendance section.
3. Receive a passing grade on all course projects. Projects are graded on an A-F scale. A grade of a D and above is passing.
4. Technical Competency: Receive a passing grade on 80% of all assignments. Assignment is graded based on completion. To receive a passing grade on an assignment, students must complete 100% of the minimum tasks specified in that assignment.

Students are also required to fulfill all financial obligations to Divergence Academy before they graduate.

Graduates will receive a certificate of completion.

*Occupation(s) for which training will be provided:*

1. Entry-level Ethical Hacker, Mobile and Web Application Security Testers
2. Main job-skills students will learn: Infrastructure, Web Application and Mobile security as well as Social Engineering with focus on day-to-day penetration testing.
3. Different work settings in which program graduates may work: Graduates will work in professional business setting where they will interact with IT and product development teams. Graduates will also interact with their supervisors to provide status updates about their projects.

### *Grading System*

Grade	Definition
P (Pass)	Has satisfactorily met all minimum course requirements. A grade of Pass is equivalent to a grade of A-D.
F (Fail)	Has not satisfactorily met all minimum course requirements. A grade of Fail is equivalent to an F.
I (Incomplete)	An incomplete is provided if a faculty member gives an extension to a particular student to complete a course project. An extension can be granted for a maximum of 30 days from the last day of class. If a student is not able to complete his/her project within this amount of time, he/she will be given an F. A student who is obligated for the full tuition may request a grade of “incomplete” if the student withdraws for an appropriate reason unrelated to the student’s academic status. The student may re-enroll in the program during the 12-month period following the date the student withdraws and complete those incomplete subjects without payment of additional tuition. Students may finish their course with re-enrollment from admissions

## CYBERSECURITY RISK MANAGEMENT

Cybersecurity risk management guides a growing number of IT decisions. Cybersecurity risks continue to have critical impacts on overall IT risk modeling, assessment and mitigation. In this course, a student will learn about the general information security risk management framework and its practices and how to identify and model information security risks and apply both qualitative and quantitative risk assessment methods. Understanding this framework will enable the risk management professional to articulate the business consequences of identified information security risks. These skills are essential for any successful information security professional. The goal of this course is to teach students the risk management framework with both qualitative and quantitative assessment methods that concentrate on the information security (IS) aspect of IT risks. The relationship between the IT risk and business value will be discussed through several industry case studies. This course also prepares a student for a CISSP certification.

Length of Program: 400 clock hours

Module Number	Module Title	Lecture	Lab	Ext	Total
CRM-001	Cybersecurity Foundations	25	15	0	40
CRM-002	Cybersecurity Risk Management	70	30	0	100
CRM-003	Asset Security	15	5	0	20
CRM-004	Security Engineering	25	15	0	40
CRM-005	Communication and Network Security	15	5	0	20
CRM-006	Identity and Access Management	15	5	0	20
CRM-007	Security Assessment and Testing	25	15	0	40
CRM-008	Security Operations	25	15	0	40
CRM-009	Cloud Security	25	15	0	40
CRM-010	Software Development Security	25	15	0	40

*The approximate time required to complete the program is 10 weeks (40 hours/week) for the full-time day or 20 weeks for the evenings or a two days per weekend program.*

### *Module Descriptions*

#### **CRM-001**

##### **CYBERSECURITY FOUNDATIONS**

*Subject Hours:* 40 hours (25 hours lecture, 15 hours lab)

*Prerequisites:* Acceptance into the program

*Subject Description:* When the consequences of a security breach are considered- the proprietary information completely accessible, hefty fines for security lapses, news headlines about your company's security breach, it becomes obvious: An in-depth and thorough understanding of cyber security fundamentals and best practices is necessary. In this module, students will gain a global perspective of the challenges of designing a secure system, touching on all the cyber roles needed to provide a cohesive security solution. Through lecture, labs, and discussion, students will learn about current threat trends across the Internet and their impact on organizational security. Students will also review the standard cybersecurity terminology and compliance requirements, examine sample exploits, and gain hands-on experience mitigating controls. In addition to technical cybersecurity components, they will learn and explore the non-technical aspects of cybersecurity necessary to mitigate risk and lessen exposure, including risk management, threat determination, disaster recovery, security policy management, and business continuity planning. This course provides an excellent foundation for those proceeding to CISSP training.

#### **CRM-002**

##### **CYBERSECURITY RISK MANAGEMENT**

*Subject Hours:* 100 hours (70 hours lecture, 30 hours lab)

*Prerequisites:* CRM-001

*Subject Description:* Through application of International Standards Organization (ISO) 27005 and Control Objectives for Information and Related Technologies (COBIT) frameworks, this module charts out a systematic process, which is exact in terms of required steps, and rigorous in terms of classifying and treating risk.

### **CRM-003**

#### **ASSET SECURITY**

*Subject Hours:* 20 hours (15 hours lecture, 5 hours lab)

*Prerequisites:* CRM-001

*Subject Description:* Students will learn about the essential assets in the organization that need protection. This is especially important at the start of a cyber-security initiative when a solid grasp of organization information assets is crucial. What are the key data and associated information flows, functions and systems that allow you to operate and deliver value to customers and users? Only by knowing this can there be an assessment of risks posed by cyber-threats, identification of the full scope of what needs defending and the investments prioritization needs.

### **CRM-004**

#### **SECURITY ENGINEERING**

*Subject Hours:* 40 hours (25 hours lecture, 15 hours lab)

*Prerequisites:* CRM-003

*Subject Description:* Students will learn about the application of sound engineering principles to protect assets in the organization through examples of systems and failures. This module will also cover the concepts related to the application of tools ex. Cryptography and Public Key Infrastructure, and what is means to design secure distributed systems for real-world applications.

### **CPPT-005**

#### **COMMUNICATION AND NETWORK SECURITY**

*Subject Hours:* 20 hours (15 hours lecture, 5 hours lab)

*Prerequisites:* CRM-004



*Subject Description.* As the electronic storage of sensitive data becomes more common, the network security field continues to grow. Communication between networks must not only occur, but occur securely. Network protocols are in place to outline the rules that direct network communications between the networked computers, and it is through these means that computers with different operating systems and software can communicate with each other. This learning module focuses specifically on the basic network and telecommunications concepts. This includes, but is not limited to: secure network architecture design, secure network components, network attacks and secure communication channels. Topics span from network classes and their ranges, media used for transmission and weaknesses of Network Topologies. One important key concept, tunneling as well as a review of key OSI principles.

## **CRM-006**

### IDENTITY AND ACCESS MANAGEMENT

*Subject Hours:* 20 hours (15 hours lecture, 5 hours lab)

*Prerequisites:* CRM-005

*Subject Description.* An identity management access (IAM) system is a framework for business processes that facilitates the management of electronic identities. The framework includes the technology needed to support [identity management](#). IAM technology can be used to initiate, capture, record and manage user identities and their related access permissions in an automated fashion. This ensures that access privileges are granted according to one interpretation of policy and all individuals and services are properly authenticated, authorized and audited. Students will learn to develop well-controlled IAM processes to ensure regulatory compliance i.e. if the organization is audited, the management will be able to prove that company's data is not at risk for being misused.

## **CRM-007**

### SECURITY ASSESSMENT AND TESTING

*Subject Hours:* 40 hours (25 hours lecture, 15 hours lab)

*Prerequisites:* CRM-006

*Subject Description.* Students will learn two major components of assessment and testing; overall security assessment (including vulnerability scanning, penetration testing, security assessments, and security audits), and testing via static and dynamic methods. Static testing tests the code passively: the code is not running. This includes walkthroughs, syntax checking, and code reviews. Dynamic methods include fuzzing, a type of black box testing that submits random, malformed data as inputs into software programs to determine if they will crash.

## **CRM-008**

### SECURITY OPERATIONS

*Subject Hours:* 40 hours (25 hours lecture, 15 hours lab)

*Prerequisites:* CRM-007

*Subject Description.* Security Operations includes applications for security and incident response, vulnerability response and threat intelligence. Security Operations also integrates with existing security infrastructure and provides the capabilities to identify, prioritize and resolve real security threats fast. In this module students will learn about the available tools to explore threat intelligence data, configure and use vulnerability response tools, and perform security incident response management.

## **CRM-009**

### CLOUD SECURITY

*Subject Hours:* 40 hours (25 hours lecture, 15 hours lab)

*Prerequisites:* CRM-008

*Subject Description.* Cloud security module starts out with a detailed introduction to the various delivery models of cloud computing, ranging from Software as a Services (SaaS) to Infrastructure as a Service (IaaS) and everything in between. Each of these delivery models represent an entirely separate set of security conditions to consider, especially when coupled with various cloud types, including public, private and hybrid. An overview of security issues within each of these models is covered with an in-depth discussion of the risks involved.

## CRM-010

### SOFTWARE DEVELOPMENT SECURITY

*Subject Hours:* 40 hours (30 hours lecture, 10 hours lab)

*Prerequisites:* CRM-009

*Subject Description:* Students will learn the most important aspects of software development security to understand, apply and enforce software security. In this module, different approaches to software development that attempt to reduce the likelihood of defects or flaws are covered. The Waterfall, Spiral, and Rapid Application Development (RAD) models of the software development are introduced. The other topics include a basic discussion of several types of software vulnerabilities and the issues surrounding disclosure of the vulnerabilities.

#### *Graduation Requirements*

Divergence Academy measures student progress through frequent assignments, Midterm exam, Final exam, quizzes, class attendance/participation and in-depth projects/presentations. Students are graded on a pass/fail basis. To receive a passing grade, students must maintain satisfactory progress as follows:

1. Receive a passing grade on 80% of all assignments. Assignment is graded on the basis of completion. To receive a passing grade on an assignment, students must complete 100% of the minimum tasks specified in that assignment.
2. Maintain consistent attendance as outlined in the Attendance section. A passing grade in attendance will be given to students with no more than two or four absences, depending on the program.
3. Receive a passing grade on all course projects. Projects are graded on an A-F scale. A grade of a D and above is passing.
4. The formula used to calculate the course grade – 30% Final Exam, 20% Homework Assignments, 20% Midterm Exam, 5% Quizzes, 20% Presentations/Projects, 5% Class Attendance/Participation.

Students are also required to fulfill all financial obligations to Divergence Academy before they graduate.

Graduates will receive a certificate of completion.

*Occupation(s) for which training will be provided:*

1. An IT Security Specialist who installs, configures and upgrades security software to prevent cyber-attacks, educate employees of the organization on computer security, monitor networks for security breaches, and inevitably respond to successful attacks with the appropriate countermeasures.
2. Computer crime investigator - these are security pros who use cutting-edge forensics hardware and software to gather evidence for use in prosecuting cyber related crimes.
3. Network Administrator who installs, support and manage the networks and computer systems that keep information flowing. They implement and maintain network hardware and software, troubleshoot network problems, and ensure network security, availability & performance standards.
4. IT Project manager who ensures that complex technical projects, such as systems upgrades and technology deployments, are completed on time, under budget and to specifications. These professionals plan and coordinate the efforts of the internal project team, third party contractors and consultants to bring IT projects to successful completion.

*Grading System*

<b>Grade</b>	<b>Definition</b>
P (Pass)	Has satisfactorily met all minimum course requirements. A grade of Pass is equivalent to a grade of A-D.
F (Fail)	Has not satisfactorily met all minimum course requirements. A grade of Fail is equivalent to an F.
I (Incomplete)	An incomplete is provided if a faculty member gives an extension to a particular student to complete a course project. An extension can be granted for a maximum of 30 days from the last day of class. If a student

	is not able to complete his/her project within this amount of time, he/she will be given an F. A student who is obligated for the full tuition may request a grade of “incomplete” if the student withdraws for an appropriate reason unrelated to the student’s academic status. The student may re-enroll in the program during the 12-month period following the date the student withdraws and complete those incomplete subjects without payment of additional tuition. Students may finish their course with re-enrollment from admissions
--	--

## PYTHON FOR DATA ANALYSIS (SEMINAR)

Course Length: 40 hours

### Overview

The goal of this 5-day seminar is to introduce data analysis with the Python programming language, and is aimed at beginners. We introduce how to work with different data structures in Python. We cover the most popular modules including Numpy, Scipy, pandas, Matplotlib, seaborn, and ggplot for data analytics and visualization.

### What you’ll learn:

- **Introduction to Python:** Basic objects in Python, Variables and self-defining functions, Control flow, Advanced data structures
- **Deep dive with Python:** Object-oriented programming, deal with files, run Python scripts, and handle and process strings
- **Scientific computation tools** – Understand and apply three modules for scientific computation that make Python as powerful as Matlab: Numpy, Matplotlib and Scipy.
- **Data Visualization** - Generate graphics by using appropriate tools like **Seaborn** and **Plotly**.

- **Data manipulation with Pandas** - Understand and apply provides rich data structures and functions designed to make working with structured data fast, easy, and expressive.

After this seminar, developers will get familiar with the Python language including object-oriented principles, understand the use of various packages for data wrangling and cleaning, and perform exploratory data analysis. Students should be able to take advantage of ipython notebook as a resource to demonstrate the results of code and code changes interactively.

## DATA SCIENCE (SEMINAR)

Course Length: 60 hours

### Overview:

The 6-week intermediate level data science course is a practical introduction to the interdisciplinary field of data science and machine learning, which is at the intersection of computer science, statistics, and business. You will learn to use the programming languages, tools, and technologies to help you acquire, clean, parse, and filter your data.

A significant portion of the course will be a hands-on approach to the fundamental modeling techniques and machine learning algorithms that enable you to build robust predictive models about real-world data and test their validity. You will also gain practice communicating your results and insights about how to build systems that are more intelligent using the data that you have gathered. One such system is Recommendation System.

Recommender systems are used to predict the best products to offer to customers. These systems have become extremely popular in virtually every single industry, helping customers find products they'll like. Most people are familiar with the idea, but nearly everyone is exposed to several forms of personalized offers and recommendations each day (Google search ads being among the biggest source).

Building recommendation systems is part science, part art, and many have become extremely sophisticated. Such a system might seem daunting for those uninitiated, but it's actually fairly straight forward to get started if you're using the right tools and techniques.

### What you'll learn

- **Data Science Foundations & Exploratory Data Analysis:** Build on Descriptive Statistics, Probability Theory, and explore distributions using charts.
- **Machine Learning, Bias-Variance and Model Evaluation:** Model selection and diagnostics.
- **Web Scraping, Regression and Classification:** Gather data from internet sources, and stat with building classical regression and classification models.
- **Naïve Bayes, Natural Language Processing:** Modeling with Naïve Bayes classifiers, social media data collection and storage, and sentiment analysis.
- **Decision Trees and Ensembles, Clustering:** Supervised learning beyond classical models and Unsupervised learning with K-means.
- **Big Data Analytics:** Scaling data analysis with large datasets on Spark and Hadoop Map-Reduce.

By the end of this course students will be able to:

- Acquire, clean, and parse large sets of data using Python
- Choose the appropriate modeling technique to apply to your data
- Programmatically create predictive data models using machine learning techniques
- Apply probability and statistics concepts to create and validate predictions about your data
- Communicate your results to an appropriate audience

## DATA SCIENCE ADAPTIVE (SEMINAR)

Course Length: 105 hours

### Overview:

Adaptive course provides students option to select one of the listed modules to participate, and engage through project-based learning. Each module teaches you how to complete up to three Machine Learning projects through application of Supervised and Unsupervised Learning techniques. You will learn how to apply Machine Learning algorithms to real-world applications from examples including Amazon Movies, City Bike sharing, Airline Flight Delays, Yelp Restaurant reviews, and Datasets from Kaggle Competitions. This intermediate to advanced course is designed specifically for working professionals that have hands-on software development experience using programming languages such as Python and SQL, and are looking to apply the contemporary predictive modeling techniques.

### What you'll learn:

- MODULE 1: DATA SCIENCE FOUNDATIONS
  - SOFTWARE ENGINEERING AND EXPLORATORY DATA ANALYSIS: Master cleanup of datasets using Python and SQL, exploratory data analysis to generate hypotheses and intuition, and communication of results through visualization, stories, and summaries
  - MODELING FOR INFERENCE: Develop approaches to performing inference, and acceptance of results; master concepts in causal inference and motivate the need for experiments; apply statistical tools to help plan experiments: exploratory analysis, apply statistical methods to estimate causal quantities of interest and construct appropriate confidence intervals.
- MODULE 2: MACHINE LEARNING
  - SUPERVISED LEARNING: Develop a modeling lifecycle – from specification, fit, and accuracy thru reliability; apply feature selection methods, finding “optimal” model parameters based on data; master Linear Regression - Bias-variance Tradeoff, and Logistic Regression including multiclass modeling.
  - NATURAL LANGUAGE PROCESSING: Apply visualization of model performance under various kinds of uncertainty; further consideration of what is desired from data mining results using Decision Trees, Random Forests, and Ensembles; Implement Natural Language Processing (NLP) processes into projects and software applications;



Programmatically extract data stored in common formats; critically assess options for cleaning data in different contexts; store, retrieve, and analyze data using NoSQL databases

- UNSUPERVISED LEARNING: Apply feature selection methods such as – Filtering and wrapping algorithms; master unsupervised methods in predictive analytics, in network and text analytics; apply Dimension reduction of predictor space and Graphing analysis algorithms for clustering (community detection in graph networks)
- MODULE 3: SCALING FOR ANALYTICS
  - DATA ENGINEERING: Use Hadoop ecosystem for Pre-processing; and then apply Exploratory Data Analysis and Predictive Modeling; develop Mappers, Reducers and jobs using Hive, SQOOP, and PIG scripting; master Hadoop data workflows and jobs with Python; read and write data to HDFS; and apply the next generation framework i.e. Spark (in-memory), for Filtering, Aggregating and Searching.
  - MACHINE LEARNING CASE STUDIES: Implement recommenders from scratch and use software libraries and tools to implement more advanced recommenders; develop REST API for predictive models; deploy models into production using various methods including Predictive Modeling Markup Language (PMML), develop web applications that consume predictive models, understand Platform-as-a-service offerings to deploy web applications, review additional uses cases such as Anomaly Detection, Customer Churn, and Time series Forecasting.

By the end of this course students will be able to:

- Acquire, clean, and parse large sets of data using Python
- Choose the appropriate modeling technique to apply to your data
- Programmatically create predictive data models using machine learning techniques
- Apply probability and statistics concepts to create and validate predictions about your data
- Communicate your results to an appropriate audience

## APPLIED BIG DATA ANALYTICS (SEMINAR)

Course Length: 40-hours

### Overview:

This course is for software engineers, data analysts, business analysts, technical program managers, architects, database administrators, and researchers with an interest in data science and big data engineering. The format of the course is 50% lectures and 50% labs with exercises. This course is a practical introduction to the interdisciplinary field of data science and machine learning, which is at the intersection of computer science, statistics, and business.

A significant portion of the course will be a hands-on approach to the fundamental modeling techniques and machine learning algorithms that enable you to build robust predictive models. You will learn to use the Python programming language, AWS and Azure Machine Learning tools, and technologies to help you apply machine learning techniques to practical real-world problems. The two in-class projects with Kaggle capstone and IoT streaming will crystallize the concepts learned in the course.

### What you'll learn

- **Data Exploration and Visualization:** The first and most important task of the data scientist is to understand their data. The bulk of our first day is dedicated to the theory and practice of understanding data. Through a series of interactive, hands-on exercises, we teach you how to dissect and explore data, engineer your features, and clean your data to prepare it for modeling. You will learn not just the mechanics of data exploration, but also the proper mindset, one that will help you tease out the patterns hidden in your data.
- **Introduction to Predictive Analytics and Classification:** Our first foray into predictive analytics is guided by a deep dive into the mechanics and theory behind decision tree models. The basis of some of the most successful predictive models, decision trees provide a useful vehicle for hands-on exercises in training and testing classification models in Python.

- **Evaluation of Predictive Models:** One of the subtlest and trickiest areas of modern data science is in model evaluation. The risk of “overfitting” and producing a model that generalizes very poorly constantly hangs over the practitioner’s head. We teach you about the metrics and methods you can use to protect yourself from this danger, giving you direct, practical experience in how to tune your models for greatest effectiveness. We’ll familiarize you with the evaluation and model tuning capabilities of Python.
- **Ensemble Methods:** Two models working in concert are better than one. That’s the fundamental principle underlying one of the most important modern advances in machine learning, ensembles. We take you through the underlying theory, explaining why ensembles outperform single models, as well as pointing out the most common pitfalls and dangers. We cover both bagging and boosting strategies for constructing ensembles, using random forests and AdaBoost as concrete examples. You’ll build and tune multiple kinds of ensemble methods for yourself, in Python.
- **Deploying Machine Learning Models:** The best model in the world is useless if you can’t get new data to it. Azure and Amazon Machine Learning both provide direct and simple processes for setting up real-time prediction endpoints in the cloud, allowing you to access your trained model from anywhere in the world. We walk you through constructing your own endpoints, and show a few practical demos of how this can be used to expose a predictive model to anyone you’d like to use it.
- **Parameter Tuning:** Modern machine learning algorithms are designed to work well “out of the box”, but the default settings are rarely the truly optimal ones. We teach you to understand the effects of each algorithm’s configuration parameters, and to use this knowledge to tune your models for optimal performance.
- **Introduction to Regression:** Regression and classification are the two sides of the supervised learning coin. You will learn how to adapt the techniques you have learned to the challenge of predicting prices, revenues, click rates, and more. We give you an overview of how regression models learn, teach you how to evaluate them, and demonstrate the use of regularization to prevent overfitting. We end with hands-on exercises in Python.
- **Text Analytics:** Many applications of data science require analysis of unstructured data. We will teach you the basics of converting text into structured data, showing you how to avoid some of the most common pitfalls.

- **Fundamentals of Big Data Engineering:** The first challenge of big data isn't one of analysis, but rather of volume and velocity. How do you process terabytes of data in a reliable, relatively rapid way? We teach you the basics of MapReduce and HDFS, the technologies which underlie Hadoop, the most popular distributed computing platform. We also introduce you to Spark, the next wave of distributed analysis platforms.
- **A/B Testing & Online Experimentation:** Online experimentation is perhaps the most misused of data science techniques. We will walk through the best practices for designing and evaluating A/B and multi-variate tests. We discuss how to choose the appropriate metrics, how to detect and avoid errors, and how to properly interpret test results.
- **Kaggle Capstone:** You've been learning the knowledge and skills of data science for 3 days. Now it's time to put those new skills to the test with a real problem. Kaggle's Bike Sharing Demand prediction competition is the perfect testing ground to cut your teeth on.
- **Event Ingestion and Stream Processing:** How do we build a scalable data ingestion process? Modern companies need platforms which can redirect gigabytes of data per second, while handling interruptions gracefully and preserving the integrity of the data.
- **IoT Case Study:** You're now prepared to embark on building your own end-to-end ETL pipeline in the cloud. You will stream data from your smartphone to an event ingestor, process that data, and write it out to cloud storage. You will then be able to read the data into Azure ML for analysis and processing.

By the end of this course students will be able to:

- Acquire, clean, and parse large sets of data using Python
- Choose the appropriate modeling technique to apply to your data
- Programmatically create predictive data models using machine learning techniques
- Apply probability and statistics concepts to create and validate predictions about your data
- Communicate your results to an appropriate audience

## DEEP LEARNING (SEMINAR)

Course Length: 60-hours

The purpose of this 60 hours' class is to help you master the core concepts of neural networks, including modern techniques for deep learning. After working through the lessons, you will have written code that uses neural networks and deep learning to solve complex pattern recognition problems. And you will have a foundation to use neural networks and deep learning to attack problems of your own devising. We'll develop living code, not just abstract theory, code which you can explore and extend. This way you'll understand the fundamentals, both in theory and practice, and be well set to add further to your knowledge.

One conviction underlying the course is that it's better to obtain a solid understanding of the core principles of neural networks and deep learning, rather than a hazy understanding of a long list of ideas. If you've understood the core ideas well, you can rapidly understand other new material. In programming language terms, think of it as mastering the core syntax, libraries and data structures of a new language. You may still only "know" a tiny fraction of the total language – many languages have enormous standard libraries – but new libraries and data structures can be understood quickly and easily.

### What you'll learn

- Image Recognition
- Convolution Neural Networks (CNN)
- Overfitting
- Embeddings and Natural Language Processing
- Recursive Neural Networks
- Convolution Neural Networks (CNN) Architectures

**By the end of this course** students will be able to understand the core principles behind neural networks and deep learning by working on a concrete problem: the problem of teaching a computer to recognize

problems like Dogs vs Cats. This problem is extremely difficult to solve using the conventional approach to programming. And yet, as we'll see, it can be solved well using a simple neural network and with just a few lines of code. What's more, we'll improve the program through many iterations, gradually incorporating more and more of the core ideas about neural networks and deep learning.

## R FOUNDATIONS (SEMINAR)

Course Length: 40 hours

### Overview

The beginner's R Foundations course is the first step in your journey in the R programming language. In this R course, you will learn about conditional statements, loops and functions to power your own R scripts. Next, you will learn to make your R code more efficient and readable using the apply functions. Finally, the utilities module will get you up to speed with regular expressions in the R programming language, data structure manipulations and times and dates. This R course will allow you to learn R and take the next step in advancing your overall knowledge and capabilities while programming in R. You will also learn data analysis through understanding of relationships among variables. Exploring data with multiple variables requires new, more complex tools, but enables a richer set of comparisons. You will learn how to describe relationships between two numerical quantities. You will characterize these relationships graphically, in the form of summary statistics, and through simple linear regression models.

### What you'll learn

#### DATA PREPARATION & DATA EXPLORATION

- Installing and getting started with R
- Understanding the strengths and limitations of R
- Google Analytics, Google Trends and Google Search Console Terms and Conditions with respect to data use

- Reading and writing data with R
- Data exploration and data preparation

#### SCRIPTING AND FUNCTIONS

- Common R functions and scripts
- Writing R functions and scripts
- Introduction to plotting engines in R
- Programming efficiently in R
- Retrieving and loading Google Analytics data with R

#### DATA SOURCES AND VISUALIZATION

- Retrieving Google Trends and Google Search Console data with R
- Curve Fitting, prediction and interpolation
- Geostatistics, geocoding and mapping
- Advanced graphics building and communicating your case in graphics

#### INTERACTIVE VISUALIZATIONS

- Using Shiny for simple interactive visualizations
- Setting up batch jobs to maintain historical data

#### CORRELATIONS AND PREDICTIVE MODELS

- Advanced tools and packages and developing predictive models with R
- Using R to prepare both static and interactive graphics of web analytics data
- Using R to prepare correlations and predictive models of web analytics behavior

By the end of this course students will be able to:

- Apply R programming for Data Analysis
- Apply R programming for advanced scenarios including Geostatistics, web analytics and Shiny for interactive visualizations.

## EXECUTIVE DATA SCIENCE (SEMINAR)

Course Length: 40 hours

### Overview

In this course, you will learn what you need to know to begin assembling and leading a data science enterprise, even if you have never worked in data science before. You'll get a crash course in data science so that you'll be conversant in the field and understand your role as a leader. You'll also learn how to recruit, assemble, evaluate, and develop a team with complementary skill sets and roles. You'll learn the structure of the data science pipeline, the goals of each stage, and how to keep your team on target throughout. Finally, you'll learn some down-to-earth practical skills that will help you overcome the common challenges that frequently derail data science projects.

### What you'll learn

- **CRASH COURSE TO DATA SCIENCE:** Understand what the terms mean and how they play a role in successful organizations, learn what all the data science action is about, including those who will eventually need to manage data scientists.
- **BUILDING A DATA SCIENCE TEAM:** Data science is a team sport. As a data science executive, it is your job to recruit, organize, and manage the team to success. We will cover how you can find the right people to fill out your data science team, how to organize them to give them the best chance to feel empowered and successful, and how to manage your team as it grows.
- **MANAGING DATA ANALYSIS:** Describe the process of analyzing data and how to manage that process. We describe the iterative nature of data analysis and the role of stating a sharp question, exploratory data analysis, inference, formal statistical modeling, interpretation, and communication. In addition, we will describe how to direct analytic activities within a team and to drive the data analysis process towards coherent and useful results.



- **DATA SCIENCE IN REAL LIFE:** Have you ever had the perfect data science experience? The data pull went perfectly. There were no merging errors or missing data. Hypotheses were clearly defined prior to analyses. Randomization was performed for the treatment of interest. The analytic plan was outlined prior to analysis and followed exactly. The conclusions were clear and actionable decisions were obvious. Has that ever happened to you? Of course not. Data analysis in real life is messy. How does one manage a team facing real data analyses? We contrast the ideal with what happens in real life. By contrasting the ideal, you will learn key concepts that will help you manage real life analyses. You will learn also learn about the contemporary trends in Big Data, IoT, and Cognitive Artificial Intelligence (AI).
- **EXECUTIVE DATA SCIENCE CAPSTONE:** The Executive Data Science Capstone, the culminating project, is an opportunity to apply what they've learned to a real-world scenario. Your task will be to lead a virtual data science team and make key decisions along the way to demonstrate that you have what it takes to shepherd a complex analysis project from start to finish. You will prepare and deliver a presentation, which will be evaluated by your fellow participants.

By the end of this course students will be able to:

- Assemble the right team
- Ask the right questions
- Avoid the mistakes that derail data science projects

## **DATA SCIENCE FOR PROCESS MINING (SEMINAR)**

Course Length: 40 hours

### **Overview**

Process mining is the missing link between model-based process analysis and data-oriented analysis techniques. Through concrete data sets and easy to use software the course provides data science knowledge that can be applied directly to analyze and improve processes in a variety of domains.

Data science is the profession of the future, because organizations that are unable to use (big) data in a smart way will not survive. It is not sufficient to focus on data storage and data analysis. The data scientist also needs to relate data to process analysis. Process mining bridges the gap between traditional model-based process analysis (e.g., simulation and other business process management techniques) and data-centric analysis techniques such as machine learning and data mining.

Process mining seeks the confrontation between event data (i.e., observed behavior) and process models (hand-made or discovered automatically). This technology has become available only recently, but it can be applied to any type of operational processes (organizations and systems). Example applications include: analyzing treatment processes in hospitals, improving customer service processes in a multinational, understanding the browsing behavior of customers using booking site, analyzing failures of a baggage handling system, and improving the user interface of an X-ray machine. These applications have in common that dynamic behavior needs to be related to process models.

The course explains the key analysis techniques in process mining. Participants will learn various process discovery algorithms. These can be used to automatically learn process models from raw event data. Various other process analysis techniques that use event data will be presented. Moreover, the course will provide easy-to-use software, real-life data sets, and practical skills to directly apply the theory in a variety of application domains.

This course starts with an overview of approaches and technologies that use event data to support decision making and business process (re)design. Then the course focuses on process mining as a bridge between data mining and business process modeling.

### **What you'll learn**

1. Process Modeling, Analysis, and Data Mining
2. Process Models and Process Discovery
3. Conformance Checking and Process Model Enrichment
4. Analyzing Lasagna and Spaghetti Processes

## 5. Implement End-to-End Case Study

By the end of this course students will be able to:

- Have a good understanding of Business Process Intelligence techniques
- Relate process mining techniques to other analysis techniques such as simulation, business intelligence, data mining, machine learning, and verification
- Apply basic process discovery techniques to learn a process model from an event log (both manually and using tools)
- Apply basic conformance checking techniques to compare event logs and process models (both manually and using tools)
- Extend a process model with information extracted from the event log (e.g., show bottlenecks)
- Have a good understanding of the data needed to start a process mining project
- Characterize the questions that can be answered based on such event data
- Explain how process mining can also be used for operational support (prediction and recommendation)
- Conduct process mining projects in a structured manner.

## CLOUD COMPUTING CONSULTANT (SEMINAR)

Course Length: 120 hours

### Overview

The 120-hour course is a practical introduction to the application of well architected cloud solutions. The course is designed to teach cloud computing consultants how to optimize the use of the cloud services by understanding how these services fit into cloud-based solutions. Because architectural solutions may differ depending on industry, type of applications, and size of business, this course emphasizes cloud best practices and recommended design patterns to help students think through the process of architecting optimal IT solutions. It also presents case studies throughout the course that

showcase how some customers have designed their cloud infrastructures and the strategies and services they implemented.

You will understand the concepts specific to designing and deploying scalable, highly available, selecting the appropriate service based on data, compute, database, or security requirements, and identifying appropriate use of architectural best practices. This course is intended for System Administrators and Software Developers that have working knowledge of one or more high-level programming languages and intermediate knowledge of designing cost efficient, available, fault-tolerant, and scalable distributed systems.

Opportunities to build a variety of infrastructures via a guided, hands-on approach are also provided. This course will help you understand how to use the Software Development Kits (SDK) to develop secure and scalable cloud applications, provides in-depth knowledge about how to interact with cloud platforms using code and covers key concepts, best practices, and troubleshooting tips. This course also includes step-by-step lessons, hands-on labs, notes, and quizzes to help you prepare for the three AWS associate exams. The course starts with the core concepts and takes you through everything you need to know to be a Cloud Computing Professional.

### What you'll learn

- MANAGING LINUX AND WINDOWS SYSTEMS
  - Linux Fundamentals
  - Linux Security and Networking
  - Bash scripting, Managing services and processes
  - Windows Fundamentals, Windows Administration, and Windows Monitoring
  - System Administration Fundamentals – Networking, Computing Infrastructure, and Web Servers
- COMPUTING IN CLOUD
  - Cloud Segments, Cloud Deployment Models, Cloud Security
  - Fundamentals of Cloud Services (storage and compute)
  - Relational Database Fundamentals

- Web Services, Application Logging and Message Queues
- IMPLEMENTING SOLUTIONS USING REFERENCE ARCHITECTURES
  - Reference Architectures
  - DevOps Use case / scenarios to employ various AWS services
  - Use Cases and Labs

By the end of this course students will be able to:

- Apply the best architecture frameworks to build cloud-based infrastructure that is more efficient in order to increase performance and reduce costs.
- Apply best practices infrastructure that is scalable, reliable, and highly available managed services to enable greater flexibility and resiliency in an infrastructure.
- Take the Associate Certification Exams

## DEVOPS ENGINEERING CONSULTANT (SEMINAR)

Course Length: 120 hours

### Overview:

The purpose of this intermediate course is to help you master the core concepts of provisioning, operating, and managing distributed applications. The course covers the core principles of the DevOps methodology and examines many use cases applicable to startup, small and medium-sized business, and enterprise development scenarios. This course is intended for System Administrators and Software Developers that have working knowledge of one or more high-level programming languages (C#, Java, PHP, Ruby, Python, etc.) and intermediate knowledge of administering Linux or Windows systems at the command-line level. Any one of the three AWS or Azure associate certificates is a pre-requisite for this course.

### What you'll learn

- BUILD AUTOMATION AND DEPLOYMENT WITH MICROSERVICES
  - Case Study Introduction Part I
  - Build Automation
  - Configuration Management and Deployments
  - Running Container Clusters
  
- BUILD AUTOMATION AND DEPLOYMENT MONITORING
  - Case Study Introduction Part II
  - Build Automation
  - Configuration Management and Deployments
  - Running Container Clusters
  
- BUILD AUTOMATION AND DEPLOYMENT PRODUCTION READINESS
  - Case Study Introduction Part III
  - Build Automation
  - Configuration Management and Deployments
  - Running Container Clusters

By the end of this course students will be able to:

- Apply Infrastructure as Code – Design and Security, and Configuration Management
- Apply techniques specific to Continuous Integration, and Continuous Deployment
- Automate deployment of applications using Delivery Pipelines
- Performance-Tune Deployments, Administer and Automate Infrastructure
- Perform an architecture review of Automation and Deployment
- Create a production-ready checklist for Service deployment

## ETHICAL HACKING AND COUNTERMEASURES

Course Length: 40 hours

Overview:

Ethical hacking is the process of testing and validating an Information Technology (IT) system to determine its weaknesses and assess its vulnerabilities. Businesses and government organizations hire cybersecurity professional to break past their online security systems so that they can recommend measures that help prevent data theft and fraud. Also known as penetration testers or information security analysts, ethical hackers identify potential threats and help mitigate the risk of a real cyber-attack. The purpose of this intermediate course is to help individuals master the core concepts of ethical hacking.

The Ethical Hacking training course will significantly benefit security officers, auditors, security professionals, site administrators, and anyone who is concerned about the integrity of the network infrastructure.

### **What you'll learn**

- Introduction to Ethical Hacking
- Footprinting and Reconnaissance
- Scanning Networks
- Enumeration
- Vulnerability Analysis
- System Hacking
- Malware Threats
- Sniffing
- Social Engineering
- Denial-of-Service
- Session Hijacking
- Evading IDS, Firewalls, and Honeypots
- Hacking Web Servers
- Hacking Web Applications
- SQL Injection
- Hacking Wireless Networks
- Hacking Mobile Platforms

- IoT Hacking
- Cloud Computing
- Cryptography

By the end of this course students will be able assist IT organizations beef up the information security posture using the knowledge of with the most current security domains.

## NETWORKING AND SECURITY FOUNDATIONS

Course Length: 100 hours

### Overview:

The A+, Net+ and Security+ certifications are generally the benchmark of most entry-level positions in Information Technology. This course is designed to help students obtain valuable knowledge that they can apply beyond the classroom and within the workplace. This accelerated module provides IT professionals with the understanding of hardware, networking and security skills, while providing the technical and performance-based expertise.

### What you'll learn

- Identify the hardware components of personal computers and mobile digital devices.
- Identify the basic components and functions of operating systems.
- Identify networking and security fundamentals.
- Identify the operational procedures that should be followed by professional PC technicians.
- Install, configure, and troubleshoot display devices.
- Install and configure peripheral components.
- Manage system components.
- Manage data storage.
- Install and configure Microsoft Windows.
- Optimize and maintain Microsoft Windows.
- Work with other operating systems.



- Identify the hardware and software requirements for client environment configurations.
- Identify network technologies.
- Install and configure networking capabilities.
- Support mobile digital devices.
- Support printers and multifunction devices.
- Identify security threats, vulnerabilities, and controls.
- Implement security controls.
- Troubleshoot system-wide issues.
- Describe the purpose of networking protocols and networking in general
- Identify features of various network operating systems and the clients used to access them.
- Describe the OSI networking model and its relationship to networking components.
- Describe the network components relating to the Physical layer of the OSI model.
- Describe the function of the Data Link layer of the OSI model.
- Explain how data is transmitted over a network.
- Describe the function of the Network layer of the OSI model.
- Describe the function of the Transport layer of the OSI model.
- Describe the function of the Session layer of the OSI model.
- Explain the fundamental concepts of the TCP/IP protocol suite.
- Explain the use of TCP/IP addresses and subnets.
- Access and use a TCP/IP network.
- Describe the requirements for remote network access.
- Explain the need for and ways to implement network security and fault tolerance.
- Describe the types of information that need to be gathered prior to installing or updating a network operating system.
- Explain ways to monitor and manage a network.
- Describe a systematic approach for troubleshooting network problems.
- Networking Concepts
- Infrastructure
- Network Operations
- Network Security
- Network Troubleshooting and Tools

By the end of the course the students will have the basic computer user skills to obtain a job as an entry-level IT technician.

## NETWORK PENTESTING AND EXPLOITATION

Course Length: 40 hours

### Overview:

Network Exploitation and Pentesting exposes students to all manner of reconnaissance, scanning, enumeration, exploitation and pillaging for 802.3 networks. Topics expose students to a variety of recon, discovery, scanning, enumeration, exploitation, post-exploitation, pillaging, covering one's tracks and persistence. This course is for Penetration testers looking to broaden their overall penetration testing skill set, network engineers, system administrators, and developers.

### What you'll learn

- Target Analysis
- Scanning and Exploitation
- Insider Threat Simulation
- Malicious Binaries

By the end of this course students will have in-depth exposure and hands-on practice with all facets of 802.3 hacking, vulnerability research, pivoting, exploitation, password/hash cracking, post-exploitation pillaging and methods of setting up persistence on a victim's network.

## WIRELESS PENTESTING AND EXPLOITATION

Course Length: 40 hours

## Overview:

Wireless Pentesting and Exploitation introduces students to all manner of reconnaissance, scanning, enumeration, exploitation and reporting for 802.11 networks. The lab topics expose students to a variety of survey, database creation, scripting, and attack methods that can be used to gain a foothold in to a client's network during a penetration test. This course is for penetration testers looking to broaden their overall penetration testing skill set, wireless engineers, system administrators and developers.

## What you'll learn

- **Scanning:** conduct wireless penetration tests using open source tools against 802.11 a/b/g/n networks. In addition, students will identify characteristics and common vulnerabilities associated with WiFi.
- **Conducting Surveys:** Learn to use open source tools and hardware to conduct both mobile and static 802.11 a/b/g/n surveys. Planning and executing surveys will be covered in depth as well as data management and database management techniques.
- **Surveys, Encryption, and Exploitation:** Continue to use Kismet and Airodump-ng to conduct mobile surveys, database the information and create .kml files in order to visualize survey data. Students are then exposed to an in-depth discussion on advanced encryption security processes followed by learning how to use open source tools to exploit the security process.
- **Man-in-middle Attacks:** Learn how to conduct Man-in-the-Middle attack using easy-creds and a fake access point. Learn how to conduct various types of attacks, traffic capture, and credential harvesting once a victim connects.

By the end of this course students will have in-depth exposure to all facets of 802.11 penetration testing, encryption cracking, post-exploitation pillaging and report writing.

## PYTHON FOR PENTESTING

Course Length: 40 hours

## Overview:

**Python for Pentesters** is designed for pentesters who want to use Python to build specialized tools. This challenging module will expose students to target scanning, enumeration, exploit development, web application attacks, and persistence mechanisms through Python scripting. Upon completion, students will have built an arsenal of over 20 penetration testing tools. This course is designed for students who have basic programming/scripting experience in C or Python, knowledge of networking concepts, and knowledge of penetration testing methods and hacking tools.

## What you'll learn

- **Introduction to Building Pentest tools:** Students will review Python fundamentals and will develop target scanning and enumeration tools using modules from the Python Standard Library as well as third party modules.
- **Scanners:** Students will begin by creating custom scanners using the Nmap module. They will develop algorithms to parse complex data sets and build additional functionality into their custom tools.
- **Exploit Development:** Students will begin by taking a deep look at x86 memory architecture, operating system controls and debugging. Students will then learn how to construct exploits against stack-based buffer overflows, as well as how to embed shellcode into their Python scripts.
- **Exploit Web Application Vulnerabilities:** Students will learn about common web application vulnerabilities, reconnaissance methods and attack vectors. Students will then write code to identify and exploit Standard Query Language (SQL) and Cross-Site Scripting (XSS) vulnerabilities to reveal server-side details, as well as to find directory traversal vulnerabilities.
- **Post-Exploitation:** Students will learn how to conduct post-exploitation pillaging and employ persistence techniques. They will then learn how to build reverse shells, send encoded data via HTTP requests, and control their persistence tool via command and control mechanisms.

By the end of the course the students will have the knowledge necessary to analyze technical situations, solving them through the development of Python tools.

## POWERSHELL FOR PENTESTING

Course Length: 40 hours

### Overview:

PowerShell for Pentesters provides an introduction to using PowerShell for system and application management. Through presentations, white-board discussions, and goal-based labs, this module covers various topics that are designed to take the student from just starting out with PowerShell to an intermediate level. This course is targeted at IT staff with a good understanding of general systems installation, administration and troubleshooting. Previous programming and/or scripting experience is beneficial but not required.

### What you'll learn

1. **Introduction:** Describe the command-line shell and then introduces PowerShell and its main components and features like the ISE, workflows, desired state configuration.
2. **Commands 1:** PowerShell commands and their syntax are discussed along with key cmdlets.
3. **Pipeline 1:** Describe how multiple PowerShell commands can be used together to become a very powerful utility command.
4. **Commands 2:** Introduce how multiple commands can be combined in PowerShell language features like script blocks, functions, and remoting.
5. **Scripts:** The concept of packaging commands into script files is introduced here. Script execution, command lookup precedence and using the integrated scripting environment.
6. **Help System:** Managing and using the built-in help system.
7. **Object Models:** PowerShell as an object-based language is discussed in this module, along with the associated terminology.

8. **Operators 1:** The PowerShell scripting language provides the user with many operators.
9. **Pipeline 2:** Builds on the previous pipeline module and includes intermediate level information on using the pipeline.
10. **Providers:** PowerShell's support for interaction with various data sources (such as file system, Windows registry, certificate store).
11. **Variables and Data Types:** Builds on the previous Operators module and introduces more operators.
12. **Operators 2:** Different types of variables and how they are used in PowerShell.
13. **Arrays:** Creating, managing and using arrays to store and access information.
14. **Hash Tables:** Creating, managing and using hash tables.
15. **Flow Control:** This module introduces looping, branching and flow control statements.
16. **Scopes:** Concept of scopes as a protection mechanism and how to work with them.
17. **Packaging & Distribution:** PowerShell Modules as a code packaging and distribution method.

Lessons are organized by scenario and designed to provide students with expertise, tools and hands-on experience with Windows PowerShell.

## PACKET ANALYSIS WITH WIRESHARK

Course Length: 40 hours

### Overview:

Packet Analysis with Wireshark is for security analysts that includes 46 step-by-step labs in analyzing traffic to learn how an application works, troubleshoot slow network performance, and determine whether a machine is infected with malware. Learning to capture and analyze communications with Wireshark will help in understanding how TCP/IP networks function.

### What you'll learn

1. Customize Wireshark Views and Settings
2. Determine the Best Capture Method and Apply Capture Filters
3. Display Filters to Focus on Specific Traffic
4. Color and Export Interesting Packets
5. Build and Interpret Tables and Graphs
6. Reassemble Traffic for Faster Analysis
7. Add Comments to Your Trace Files and Packets
8. Use Command-Line Tools to Capture, Split, and Merge Traffic

## COMPETING IN CAPTURE THE FLAG EVENTS

Course Length: 40 hours

### Overview:

Computer security represents a challenge to education due to its interdisciplinary nature. Topics in computer security are drawn from areas ranging from theoretical aspects of computer science to applied aspects of information technology management. This makes it difficult to encapsulate the spirit of what constitutes a computer security professional. One approximation for this measure has emerged: the 'capture the flag' competition. Attack-oriented CTF competitions try to distill the essence of many aspects of professional computer security work into a single short exercise that is objectively measurable. The focus areas that CTF competitions tend to measure are vulnerability discovery, exploit creation, toolkit creation, and operational tradecraft.

A modern computer security professional should be an expert in at least one of these areas and ideally in all of them. Success in CTF competitions demands that participants be an expert in at least one and ideally all these areas. Therefore, preparing for and competing in CTF represents a way to efficiently merge discrete disciplines in computer science into a focus on computer security.

## What you'll learn

Two Capture the flag (CTF) events are interspersed in the Cybersecurity Professional Penetration Tester program. Each CTF event is no more than 20 hours in length.

1. Vulnerability Discovery: Auditing Source, Binaries and Webapps
2. Exploit Creation: Binary and Webapp Exploits
3. Forensics
4. Toolkits: Creation and Preparation
5. Operational Tradecraft

## ENTERPRISE MACHINE LEARNING (SEMINAR)

Course Length: 60 hours

### Overview:

The 6-week intermediate level hands on course brings together the interdisciplinary fields of data science and machine learning, which is at the intersection of computer science, statistics, and business. You will start by applying various techniques and tools to help you acquire, clean, parse, and filter your data.

A significant portion of the course will be a hands-on approach to the fundamental modeling techniques based on Statistics, Machine Learning and Neural Networks/Deep Learning algorithms that enable you to build robust predictive models about real-world data and test their validity. You will also gain practice communicating your results and insights about how to build systems that are more intelligent using the data that you have gathered.

Hands on exercises on building diverse models including pricing, risk, recommenders, image and text classification will provide clear comprehension of selecting the right strategy given the business need. As Machine Learning practices in enterprises increasingly migrate to the Cloud, this course brings the



latest of Cloud innovations from companies including Microsoft Azure, Amazon Web Services (AWS), Google Compute Platform (GCP). Get hands as well as additional training material to prepare for Machine Learning certifications provided by Cloud providers.

Capstone project helps crystalize concepts by building a Data Product that you can show case on github to prospective employers or senior leadership within your own organization.

### What you'll learn

- **MACHINE LEARNING, BIAS-VARIANCE AND MODEL EVALUATION:** Model Selection, Evaluation and Diagnostics
- **REGRESSION AND CLASSIFICATION:** Build Regression and Classification models using Statistical and Neural Network techniques. Apply Model Evaluation and Model Interpretation techniques to help decide whether to use Statistical approach Vs Neural Networks.
- **NATURAL LANGUAGE PROCESSING:** Extract features from text (convert text into numbers & vectors) and build Sentiment Analysis using Naïve Bayes Classifiers and more advanced Neural Network techniques including Long Short-term Memory.
- **DECISION TREES AND ENSEMBLES, CLUSTERING:** Supervised Learning beyond classical models and Unsupervised learning with K-means.
- **BIG DATA & CLOUD CERTIFICATION PREPARATION:** Scaling data analysis with large datasets on Spark ML, Hadoop ecosystem in the Cloud (E.g.: Azure/AWS)

By the end of this course students will be able to:

- Learn to Acquire, clean, and parse enterprise scale data sets using Python.
- Gain knowledge on choosing the appropriate modeling technique to apply to your data
- Apply Statistics and Deep Learning concepts to create and validate predictions about your data at Enterprise Scale.
- Communicate your results to an appropriate audience with compelling and interactive visualizations
- Enable enterprises migrate machine learning models into Cloud

### *Office Hours*

Office hours are 9:00 AM to 6:00 PM Monday through Friday, except for the days school will be closed. When classes are not in session, the office will be closed for lunch from 11:45 AM to 1:00 PM.

### *Class Hours*

Monday-Friday 9:00 am - 6:00 pm

Saturday 8:00 am - 6:00 pm

### *Class Schedules*

Immersive course hours run from 8:00 AM to 6:00 PM with an hour break for lunch. Seminars run from one to five days a week and course hours run from four to eight hours a day. For all courses, a ten-minute break is provided for every two hours of course instruction.

*One hour of instructional time is defined as a fifty-minute period.*

### *Holidays 2020*

New Year's Day

Martin Luther King Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Day after Thanksgiving

Winter Holidays will last from December 21, 2020 until January 3, 2021.

## *Ownership*

Divergence Academy is a d/b/a of Get Off The Drawing Board, LLC and is owned and operated by Sangeeta Ankaraju and Sravan Ankaraju.

## *Administrative Control*

### *Staff*

Sravan Ankaraju                      President and School Director

*Stanford University, Online Certificate Programs – Advanced Project Management*

*Bachelors of Science – Math/Physics, Osmania University, Hyderabad, AP, India*

*Master in Business Administration – General Business, University of Central Oklahoma, Edmond, OK*

Sravan Ankaraju                      Chief Academic Officer

*Stanford University, Online Certificate Programs – Advanced Project Management*

*Bachelors of Science – Math/Physics, Osmania University, Hyderabad, AP, India*

*Master in Business Administration – General Business, University of Central Oklahoma, Edmond, OK*

Sravan Ankaraju                      Chief Operating Officer

*Stanford University, Online Certificate Programs – Advanced Project Management*

*Bachelors of Science – Math/Physics, Osmania University, Hyderabad, AP, India*

*Master in Business Administration – General Business, University of Central Oklahoma, Edmond, OK*

Sravan Ankaraju                      School Recruitment Representative

*Stanford University, Online Certificate Programs – Advanced Project Management*

*Bachelors of Science – Math/Physics, Osmania University, Hyderabad, AP, India*

*Master in Business Administration – General Business, University of Central Oklahoma, Edmond, OK*

*Faculty*

Tim Pierson, Instructor  
Shane Walker, Instructor  
Dao Qu, Instructor  
James Anderson, Instructor  
Naveen Kumar Bannagani, Instructor  
Rodrigo Rangel Jr., Instructor  
Durga Viswanatha Raju Gadiraju, Instructor  
Richard Deon Rainey II, Instructor  
Marcel Samuel, Instructor  
Joo Ann Lee, Instructor  
Shrinath Parikh, Instructor  
Rajganesht Pandurangan, Instructor  
Logan Hillard, Instructor  
Marquel Dancy, Instructor  
John Short, Instructor  
Scott Love, Instructor  
Viswanath Puttagunta, Instructor  
Sanjay Basu, Instructor  
Michael Vien, Instructor  
Beth Lahaie, Director of Programs  
Case Copeland, Course Delivery Manager

THE INFORMATION CONTAINED IN THIS CATALOG IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

Signature
Signed by Sangeeta Ankaraju
Signature
Signed by Sravan Ankaraju

