

# Data: Practical Data Science

## **Degree Type** Certificate

The Certificate in Practical Data Science is designed for undergraduate students and will supplement current administrative, journalistic and technical careers with marketable skills. Upon completion, the student will have gained a foundational understanding and related competencies in many facets of effective communication with data.

Competencies will include conducting surveys and experiments, data wrangling, cleaning, sampling, analyzing, and visualizing of data, and more. Topics pertaining to the analysis and presentation of big data will be explored. Intended as a stand-alone certificate, the Practical Data Science certificate equips students to apply data analysis skills in any career or job that requires reporting from quantitative and qualitative sources of information.

## **Program Outcomes**

The student will be able to:

- Write and organize analysis scripts that utilize the functional programming nature of a statistical programming language and vectorization model
- Work with all modern data formats, including XML, CSV, JSON, XLS (Excel), XHTML (web pages), and understand how to appropriately transform this data for use in structured analysis projects and reporting
- Visualize data for use in exploratory data analysis as a precursor to statistical analysis of data sets; effectively communicate preliminary results toward further understanding of the problem and solution
- Apply the Cross-Industry Standard Process for Data Mining (CRISP-DM) methodology to any analysis project; develop reproducible analysis reports generated in a variety of formats
- Understand the concepts of modern statistical methods and analyses and how they apply in data analysis projects and especially how they are used in more advanced predictive modeling
- Develop advanced visualizations in support of communicating results of statistical analyses; produce clear, concise reports in conclusion of analysis of a topic as an effective demonstration of the data as it serves to enlighten and inform

## **Technical Standards**

1. Basic computer skills including software such as web browsers, office applications
2. Good manual dexterity; adequate (basic) keyboarding skills
3. Vision for reading on computer screen and printed material
4. Critical thinking ability
5. Ability to work independently as well as in small groups
6. Be an effective communicator verbally, as in an office/work environment, and write legibly.

## **Transfer Credit Policy**

In addition to Great Bay transfer credit policies, transfer of courses in the Practical Data Science program that are more than 10 years old will be evaluated by the program coordinator on an individual basis.

# Certificate Requirements

## Fall Semester

Item #	Title	Theory Hours	Lab Hours	Credits
ARTS125G	Visual Language	3	0	3
DATA210G	Elements of Data Science	3	0	3
	MATH210G or MATH225G	4	0	4
<b>Sub-Total Credits</b>		<b>10</b>	<b>0</b>	<b>10</b>

## Spring Semester

Item #	Title	Theory Hours	Lab Hours	Credits
CIS177G	Introduction to Python	2	2	3
MATH235G	Statistics for Engineers and Scientists	4	0	4
DATA220G	Data Analysis with R	3	0	3
<b>Sub-Total Credits</b>		<b>9</b>	<b>2</b>	<b>10</b>

## Summer Capstone

Item #	Title	Theory Hours	Lab Hours	Credits
DATA225G	Analytics Capstone	2	0	2
<b>Sub-Total Credits</b>		<b>2</b>	<b>0</b>	<b>2</b>

*Note: The Practical Data Science Certificate is a rigorous program. Students are expected to spend additional time beyond the minimum to complete requirements and achieve success. Students are also expected to have college level reading, writing and math skills as soon as possible after declaring this major.*

<b>Total Credits</b>			<b>22</b>
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