Cybersecurity curriculum development integrating Hands-on experience and Industry Certifications
Outline

• Miami Dade College
• History
• COMPASS Goals
• Cybersecurity curriculum
• Cybersecurity pipeline
Diego Tibaquira, Professor of Computing Science - MDC

- Former United States Marine
- Graduated from a University with the Center for Academic Excellence in Cybersecurity Designation
- Graduate Certificate in Privacy and Security sponsored by the NSA
- Worked for the Federal Government as Information Security Specialist
- Principal Investigator of NSF Grant #1800958 - COMPASS
Founded in 1959, Miami Dade is the largest college in the Florida College System with over 165,000 students. Additionally, MDC is also the largest institution of higher education in Florida, and the second-largest in the United States. Miami Dade College's main campus, the Wolfson Campus, is in Downtown Miami.
Miami Dade College or MDC, has eight campuses and twenty-one outreach centers located throughout Miami-Dade County.
Increase the number of underrepresented minorities entering the cybersecurity workforce by developing capacity to support and implement a pathway for underrepresented minority (URM) first-time in college (FTIC) and non-traditional (NT) students affordable access to a state approved one year College Credit Certificate (CCC) and/or a two-year Associate in Science degree in cybersecurity.
1. To build the capacity of college faculty and high school teachers to provide relevant and up-to-date education in cybersecurity.

2. To integrate instructional approaches into cybersecurity curriculum that have been shown to be effective in engaging and retaining minorities.

3. To create pathways into cybersecurity degree programs of study through dual-enrollment opportunities, a competency-driven boot camp, and certificate programs.

4. Create a Cybersecurity Discipline Committee
Actions

1. Create a Cybersecurity Discipline Committee to help with the creation of the Programs (CCC and AS) and to carry the conversation.

2. In the developing of the curriculum look at multiple areas to create a much more robust curriculum
   i. Industry Support – BILT (Business and Industry Leadership Team)
   ii. State Framework
   iii. NSA Knowledge Units – Looking to becoming CAE
   iv. Industry Certifications (CompTIA, ECCOUNCIL, (ISC)², etc.)
   v. Maximize Internal Expertise
COMPASS Structure

Grant PI (Faculty)

Grant Co-PI (Dean of EnTec & Design)

Grant Coordinator

Cybersecurity Committee

- Cybersecurity Faculty
- Coding Faculty
- Linux Faculty
- Networking and Security Faculty
- CISCO Specialist
**AS in Cybersecurity**

**Status**: Completed  
**Launch**: Fall 2019  
**Certifications mapped**:  

![Certifications](certifications.png)

**Locations**: North, Kendall, Wolfson, and EPC Campuses

**Goal**: 2020 NSA Accreditation as Center for Academic Excellence in Cyber Defense
Goal: NSA Accreditation as Center for Academic Excellence in Cyber Defense

Our Cybersecurity programs and courses should map to the following:

- Cybersecurity Professional Certifications.
- Cybersecurity Job Roles.
- National Security Agency Knowledge Units (KUs).
- NIST Cybersecurity Workforce Framework Knowledge, Skills & Abilities (KSAs).
- Cybersecurity professional job performance standards.
- Local industry needs
# AS in Cybersecurity

## MAJOR COURSE REQUIREMENTS (20.00 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGS 1060C</td>
<td>Introduction to Computer Technology &amp; Applications</td>
<td>4</td>
</tr>
<tr>
<td>CTS 1134</td>
<td>Networking Technologies</td>
<td>4</td>
</tr>
<tr>
<td>CTS 1120</td>
<td>Cybersecurity Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>CGS 1700</td>
<td>Introduction to Operating Systems</td>
<td>4</td>
</tr>
<tr>
<td>CIS 1531</td>
<td>Introduction to Secure Scripting</td>
<td>4</td>
</tr>
</tbody>
</table>

## PROGRAM COURSE REQUIREMENTS (16.00 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Pre-reqs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTS 1111</td>
<td>Linux +</td>
<td>4</td>
<td>CGS1060 or comp exp.</td>
</tr>
<tr>
<td>CIS 2214</td>
<td>Cybersecurity Analysis</td>
<td>4</td>
<td>CTS 1120 and CTS 1134</td>
</tr>
<tr>
<td>CET 2880C</td>
<td>Digital Forensics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CTS 2314</td>
<td>Network defense and countermeasures</td>
<td>4</td>
<td>CTS 1120 and CTS1134 or CTS1650</td>
</tr>
</tbody>
</table>

## PROGRAM COURSE ELECTIVE (9.00 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGS*, CIS*, COP*, CTS*</td>
<td></td>
</tr>
</tbody>
</table>
AS in Cybersecurity

Development of four (4) new courses to complete the KUs mapping

- CGS1700 - Introduction to Operating Systems
- CIS1531 - Introduction to Secure Scripting
- CIS2214 - Cybersecurity Analyst (CySA+)
- CIS2615 - Secure Software Development
Modification of five (5) courses after industry feedback to provide our students with updated skills

- CTS1111 - Linux+
- CTS1120 - Cybersecurity Fundamentals
- CTS1134 - Networking Technologies
- CET2880C – Digital Forensics
- CTS2314 - Network Defense and Countermeasures
**Program Description**

The College Credit Certificate in Network Security will prepare graduates with the education and skills needed to fulfill roles and positions in the Information Security industry. The coursework will include education and applied technical skills in the networking and information security fields.

**MAJOR COURSE REQUIREMENTS (20.00 credits)**

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<tr>
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<tbody>
<tr>
<td>CTS 1134</td>
<td>Networking Technologies</td>
<td>(4 credits)</td>
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<tr>
<td>CTS 1120</td>
<td>Cybersecurity Fundamentals</td>
<td>(4 credits)</td>
</tr>
<tr>
<td>CTS2314</td>
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</tr>
<tr>
<td></td>
<td>Pre-reqs. CTS 1120 and CTS1134</td>
<td></td>
</tr>
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<td>CIS 2214</td>
<td>Cybersecurity Analyst (CySA+)</td>
<td>(4 credits)</td>
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<td></td>
<td>Pre-reqs. CTS 1120 and CTS1134</td>
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</tr>
<tr>
<td>CTS 1111</td>
<td>Linux +</td>
<td>(4 credits)</td>
</tr>
<tr>
<td></td>
<td>Pre-reqs. CGS1060 or comp exp.</td>
<td></td>
</tr>
</tbody>
</table>
### Modification of the existing 24-credit CCC in Digital Forensics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGS1700</td>
<td>Introduction to Operating Systems</td>
<td>4</td>
<td>NEW</td>
</tr>
<tr>
<td>CTS 1134</td>
<td>Networking Technologies</td>
<td>4</td>
<td>NEW</td>
</tr>
<tr>
<td>CTS 1120</td>
<td>Cybersecurity Fundamentals</td>
<td>4</td>
<td>NEW</td>
</tr>
<tr>
<td>CJE 1680</td>
<td>Introduction to Computer Crimes</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CJL 2062</td>
<td>Constitutional Law &amp; Legal Procedure</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CET 2880C</td>
<td>Digital Forensics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CIS 2900</td>
<td>Directed Information Technology Study</td>
<td>2</td>
<td>NEW</td>
</tr>
<tr>
<td>---OR---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 1949</td>
<td>Co-Op Work Experience</td>
<td>2</td>
<td>NEW</td>
</tr>
</tbody>
</table>
Marketing Campaign

Padron Campus
Information Security Awareness Conference

Cybersecurity Center Info Sessions:

Registration Marathon:
Creating a Pipeline

**STUDENT PATHWAYS IN CYBERSECURITY FROM M-DCPS TO MDC**

**Dual enrollment courses at MDC**

- **CTS 1134 Networking Technologies**
- **CTS 1120 Cybersecurity Fundamentals**
- **CTS 1111 Linux +**

**FREE Summer Camps at MDC**

- **WHO?** 40 M-DCPS students
- **WHAT?** Certifications
- **HOW?** Training, book and certification exam
- **WHEN?** Summer 2019
- **WHERE?** Wolfson and InterAmerican Campuses

Location:
North, Kendall, Wolfson, and EPC
# Summer Camps for High School Students

## Free Summer Camps for M-DCPS High School Students

<table>
<thead>
<tr>
<th>Certification</th>
<th>Description</th>
<th>Location</th>
<th>Date</th>
<th>Students Commitment</th>
<th>Capacity</th>
<th>Requirements</th>
<th>Benefits covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Secure Computer User (CSCU)</td>
<td>This class will immerse students into an interactive environment where they will acquire a fundamental understanding of various computer and network security threats</td>
<td>Cybersecurity Center of the Americas, Wolfson Campus, MDC</td>
<td>June 10-14, 2019 8:30 am-12:30 pm</td>
<td>1 Year Commitment: Summer camp Fall &amp; Spring Dual Enrollment Certifications</td>
<td>20</td>
<td>Junior or Senior students</td>
<td>Book Exam cost Transportation</td>
</tr>
</tbody>
</table>

| Networking Fundamentals (CompTIA Networks) | CompTIA Network+ helps develop a career in IT infrastructure and prepares the students with the fundamentals components of computer networks. | InterAmerican Campus, MDC | June 10-14, 2019 8:30 am-4:30 pm | 1 Year Commitment: Summer camp Fall & Spring Dual Enrollment Certifications | 20 | Basic understanding of computers Junior or Senior students | Book Exam cost Meals Transportation |

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**FREE SUMMER CAMPS AT MDC FOR HIGH SCHOOL STUDENTS**

**NETWORKING**
- JUNE 10-14, 2019 8:30 AM-4:30 PM
- INTERAMERICAN CAMPUS, MIAMI DADE COLLEGE

**CYBERSECURITY**
- JUNE 10-14, 2019 8:30 AM-12:30 PM
- CYBERSECURITY CENTER OF THE AMERICAS WOLFSON CAMPUS, MDC

**CLOUD COMPUTING**
- JUNE 10-21, 2019 8:30 AM-4:30 PM
- INTERAMERICAN CAMPUS, MIAMI DADE COLLEGE

**EACH CAMP INCLUDES:**
- Book, Certification Exam, Meals and Transportation

**REQUIREMENTS:**
- Basic understanding of computers
- Junior or Senior students
- 1 Year Commitment for:

**CONTACT:** ALEXIA G. ROLLE, Ed.D., DIRECTOR CAREER & TECHNICAL EDUCATION
**EMAIL:** CCONNECT@MDC.EDU

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Are you interested?
Teachers Training

M-DCPS Support:

Confirm interest:
Leysi Rizo, Grant Coordinator
lrizo@mdc.edu

Deadline to apply:
February 28, 2019
Free Summer Camps for students

Capacity: 80 with availability to increase if needed

Confirm interest: Alexia Rolle, Director CTE ccconnect@mdc.edu

Deadline to apply: April 1, 2019
Professional Development

Professional Development For High School Teachers

WHO?
High Schools with Technology programs

WHAT?
Cybersecurity skills and certifications

HOW?
Free training and vouchers for industry certifications

WHEN?
2019-2020

WHERE?

BOOT CAMP
FOR HIGH SCHOOL TEACHERS

This class will immerse you into an interactive environment where you will acquire a fundamental understanding of various computer and network security threats.

INCLUDES BOOK, EXAM AND TRAINING FOR FREE!

AT CYBERSECURITY CENTER OF THE AMERICAS WOLFSON CAMPUS, MIAMI DADE COLLEGE JUNE 17-20, 2019

ARE YOU INTERESTED?

CONTACT: NO EXPERIENCE REQUIRED
Other Opportunities

Cyber-Competitions

Conference Attendance

Cybersecurity Education Conference
Professional Development

For MDC faculty:

Industry Certifications

Hands-on skills for Cybersecurity courses

EnTec | MIAMI DADE COLLEGE
SCHOOL OF ENGINEERING + TECHNOLOGY

CYBER-RANGE TRAINING
FOR MDC FACULTY

Introducing the Range capabilities into the new Cybersecurity courses.

AT CYBERSECURITY CENTER OF THE AMERICAS
MDC WOLFSON CAMPUS
JANUARY 2019

Supported by Compass NSF Grant
Conference Attendance

- Industry needs.
- Sharing Experiences
- Networking
- Updates
Next steps

- Apply for the next level NSF Grant
- Create a BS in Cybersecurity
  - On the works already
- Reform High school’s Cybersecurity curriculum