**Affordable Learning Georgia Affordable Materials Grants  
Continuous Improvement Grants Final Report**

*(or Mini-Grants, for R17 and earlier)*

# General Information

Date: 5/17/2022

Grant Round: R19

Grant Number: M157

Institution Name(s): Kennesaw State University

Team Members (Name, Title, Department, Institutions if different, and email address for each):

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Project Lead: Hossain Shahriar

Course Name(s) and Course Numbers:

* IT 7303 Data Privacy Technologies
* IT 7313 Physical IT Systems Security
* IT 7333 Enterprise Cloud and Wireless Security
* IT 7733 Fundamentals of Enterprise Cloud

Final Semester of Project: Spring 2022

***If applicable to your project:***

Average Number of Students Per Course Section: 35

Number of Course Sections Affected by Implementation of Revised Resources: 4

Total Number of Students Affected by Implementation of Revised Resources: 140

# Project Narrative

*Describe the course of your revision or ancillary creation project, including*

* *A summary of your project’s purpose, plan, and timeline.*
* *The original works which were revised or added to, with links. For example, if you revised an open textbook, give the title, author, and link.*
* *A narrative description of how the project’s plan was carried out.*
* *Lessons learned, including anything you would do differently next time.*

The goals of the project included updating IT 7303, IT 7313, IT 7333, and IT 7733 to

* Develop new OER materials for courses to be part of MSIT Z Degree
* Ensure all developed OER materials are free from any accessibility issues;
* Develop new OER materials based on course learning outcomes;
* Develop ancillary material such as assignments, lab material, and test banks;
* Create course packages that can be imported into D2L Brightspace, the course management system used by the University System of Georgia.

The original work revised or added are discussed below for the four courses.

IT 7303 – Data Privacy Technologies: The course is new, and all materials are new. The faculty developer created contents (slides and video lectures) to explain various data privacy and related technologies. Topics include privacy definition, privacy measurement, classical privacy preserving technologies, the privacy evaluation, and advanced privacy techniques such as differential privacy and federated learning.

IT 7313- Physical IT Systems Security: The course is new, and all materials are new. Slides and video lectures have been created. Topics covered include physical IT systems, secure architecture, container security, physical system security, emulating physical systems, SCADA security, defense mechanism for physical system, secure cloud integration with physical system, and emerging topics in physical IT system security.

IT 7333 - Enterprise Cloud and Wireless Security: In this course, accessible resources have been developed and updated on wireless network protocols, wireless LAN security tools, cloud computing infrastructure, evolution of cloud, confidentiality and integrity of cloud, wireless network threats and vulnerabilities along with current security solutions.

IT 7733 - Fundamentals of Enterprise Cloud: This is a new course. Accessible resources have been developed on topics such as cloud concepts, cloud economics and billings, cloud security, networking, content delivery, storage, databases, cloud architecture, automatic scaling.

The project development included identifying various related contents web resources, white papers, digital libraries and organizing them into OER format. Recorded lectures with transcriptions have been created. The modules and ancillary materials were used to further develop test bank, assignment, discussions and lab items. The faculty developers worked closely with the Instructional Designer team to ensure the resources are accessible.

# Materials Description

*Describe all the materials you have created or revised as part of this project. These descriptions may be used in the* [OpenALG](https://alg.manifoldapp.org/) *repository description field. Include the* [*open license your materials will be shared under*](https://creativecommons.org/share-your-work/)*—for most materials, this will be an Attribution 4.0 License (CC BY) as required in the Grants Request for Proposals.*

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| --- | --- |
| Course | Topic |
| IT 7303 | Introduction to privacy, Privacy by Design, Data Protection Laws, Privacy Enhancing Technologies, Data Security & Privacy in Healthcare Domain, Data Analytics and Privacy, Web 3.0 and Privacy |
| IT 7313 | Overview of Physical IT systems; Physical platforms and elements; Principles of secure architecture; Raspberry Pi environment; Containers and Dockers; Containers security in physical systems; Containers inside Raspberry Pi; Security issues in physical systems; session hijacking, social engineering; Emulating a physical system; Emulating sensors in CORE; SCADA security; Defense mechanism for physical IT system; Design Secure DMZ, secure firewall, IDS; Cloud Integration with physical systems; Autonomous Vehicle Overview, design of vehicle system; Kali intro and CANBUS protocol emulator; Autonomous Vehicle Safety Guidelines Requirement, CAN BUS introduction; Smart home sensors; Introduction to Amazon Alexa and Google Home; Intro with google assistant; Smart mobile/home devices safety guidelines; |
| IT 7333 | The Evolution of Wireless Network; Information Security Essentials; WLAN Overview; WLAN Threats & Vulnerabilities;  WLAN Security; WLAN Security; WLAN Security Tools; Mobile Network Security Threats & Vulnerabilities; Wireless Security Auditing & Risk Analysis; Evolution of cloud; Confidentiality and Integrity of Cloud; Cloud Threats & Vulnerabilities; Cloud security; |
| IT 7733 | Background of Cloud; Cloud concepts; Cloud economics and billing; Cloud Global Infrastructure; Cloud security; Networking Content delivery  part 1; Networking Content delivery  part 2; Compute part 1; Compute part 2; Storage; Databases; Cloud architecture; Auto Scaling and monitoring; |

# Materials Links

*If you are hosting your materials in places other than OpenALG, please provide these links in this section. Otherwise, leave blank. Note: we cannot access D2L or Canvas links.*

IT 7303 – <https://ksuweb.kennesaw.edu/~hshahria/ALG-R19/D2LExport_IT7303.zip>

IT 7313 - <http://iotas.kennesaw.edu/?page_id=1561>

IT 7333 - <https://facultyweb.kennesaw.edu/lzhao10/alg7333.php>

IT 7733 - <https://facultyweb.kennesaw.edu/xtian2/D2LExport_2436744_IT7733_FundamentalsofEnterpriseCloud_20221652.zip>

# Future Plans

* *Describe any planned or actual papers, presentations, publications, or other professional activities that you expect to produce that reflect your work on this project.*
* *Describe any plans to revise or add to these materials in the future.*

We plan to keep updating the materials as courses being offered. A paper is planned to submit in SIGITE or SIGCSE conference.