1. ***Course information***

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| **Academic Division** | System Engineering |
| **Department** |  |
| **Course name** | **Cryptography** |
| **Course code** | ELP 8011 |
| **NRC** |  |
| **Course level** | Undergraduate |
| **Requisites** |  |
| **Co – requisites** | None |
| **Credits** | 3 |
| **Theoretical hours per week** | 2 |
| **Hours per week of independent study** | 3 |
| **Number of weeks** | 16 |
| **Course Language** | English |
| **Mode course (Classroom, Virtual, Partially Virtual, others)** | Classroom |
| **Teacher** | Carlos Andrés Caro Perez |
| **Contact details** | Email Course Catalog email:cacaro@uninorte.edu.co |

1. ***Course description***

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| This course presents an introduction to computer and network security. The course will change the student perspective so he can build systems taking into account the insecurity of the environment, allowing him to create controls in the building, managing, and auditing processes of systems. |

1. ***Relevance***

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| The latest advances in technology have drastically changed the way companies make business. Advances such as the mobile revolution, big data and e-commerce have made information the most critical asset in every company. For this reason, protecting and securing these assets is a key element that must be considered as part of the strategy of any business. Information security’s best practices will help guarantee business continuity and competitiveness avoiding the risks associated with taking advantage of all the information technologies advances present in the market today. |

1. ***Related competences***

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| ***Decision making***  ***Planning***  ***Executing***  ***Verifying***  ***Analyze anomalies to determine their root causes.*** |

1. ***General objective of the course:***

This course will be oriented towards:

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| Understand information security’s importance in our increasingly complex systems world.  Get in touch with the concepts that rules today security standards.  Grow a “security mindset:” learn how to critically explore situations of computer and network usage.  Design or audit systems aligned with the latest security best practices. |

***6. Learning outcomes***

**At the end of the course, students must be able to:**

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| **Competence dimension** | **Learning outcome** |
| Knowledge of concepts | Acknowledge the Impact of the security models in the competitive success and profitability of modern Systems organizations. |
|  | Appreciate the ethical, contractual, and legal issues faced by security administrators. |
| Abilities (Applying concepts) | Design security strategies to reduce securities risks. |
|  | Know how to use planning and technology to achieve secure building standards. |
|  | Design systems taking into account security best practices. |
| Attitudes (As an individual) | Apply analysis methods, take decisions, and add strategic support to systems management and administration. |

***7. Course planner***

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| **Themes** | **Sub-themes** | **In-class hours** | **Independent work (Readings and assignments)** |
| Introduction | What is security? | 6 | Whitepapers, textbook and other articles readings. |
|  | Why security? |  |  |
|  | History of security |  |  |
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| Security Process | Security model | 6 | Case Studies, Workshops |
|  | Security Policies |  |  |
|  | Security trends |  |  |
|  | Security standars |  |  |
| Host security | Endpoint Security | 6 |  |
|  | Servers security |  |  |
|  | Mobile Security |  |  |
|  |  |  |  |
| Internet Security | Web Security | 6 |  |
|  | Email security |  |  |
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| Network Security | Network security designs | 12 | Case Studies, Workshops |
|  | Wired security |  |  |
|  | Wireless Security |  |  |
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| Cryptography | Assimetric-Cryptography | 12 | Case studies, Workshops |
|  | Symmetric-Cryptography |  |  |
|  | Hashing |  |  |
|  | Key Exchange Methods |  |  |

1. ***Methodology- Teaching strategies***

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| Methodology | **Description** |
| Presentation of concepts | As an introduction and to understand Basic Concepts. |
| Case Studies | Several practical experiences will be studied as case Studies. |
| Workshops | Workshops will be developed at the end of each main theme to apply what has been studied. |
| Labs |  |

1. ***Assessment***

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| **Learning evidence** | **Description** | **Assessment period** | % |
| Exam 1 | Will evaluate Introduction | Week 5 | 25% |
| Exam 2 | Security process | Week 12 | 25% |
| Assignments, expositions and workshops | During the length of the course students will have assignments, they will make presentations and workshops | During the whole semester | 25% |
| Final Lab exam/assignment | in which all the components are combined | Week 16 | 25% |