



AP Programme in IT Technology

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Information for Incoming Erasmus Students
2022-2023



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Contact: Flemming Andersen, Institutional Erasmus+ Officer

fka@eadania.dk

+45 7229 1111

Dania Academy

Randers Campus
Minervavej 63
DK-8960 Randers SØ
Denmark

www.eadania.com

Viborg Campus
Prinsens Allé 2
8800 Viborg

Departmental Erasmus+ Officer:

Anna Hald Refsgaard

+4572291619

anre@eadania.dk



About the Academy

Dania Academy is a modern higher education centre, with international campuses in the cities of Randers and Viborg.

Dania was established on 1 January 2009 and has a long-standing tradition for developing and offering higher education, English-taught programs in the area:

- International Marketing
- Tourism and Hotel Management
- International Hospitality Management
- IT Technology
- Automotive Management

The Automotive Management program is located in Viborg.



Excellent facilities

Dania's Viborg Campus is located in new and modern buildings, which we share with VIA University College. The Campus offers excellent study facilities to its students, including the latest IT equipment and 24-hour access to the IT centre.

The City of Viborg

The city of Viborg has 45,000 inhabitants and the whole municipality has 100,000. In medieval times Viborg was the capital of Jutland and the roman cathedral and the high court for West Denmark are reminiscences of the former clerical and juridical power of the town. Viborg also has a well preserved town centre where you will find many traces of the medieval town.

In Viborg exchange students will be at a very modern and internationally oriented campus which Dania shares with a large university college.



Conditions for Erasmus students

- Erasmus exchange students must attend all subjects of any given semester enrolled into. This is due to our multidisciplinary and group-work oriented approach to teaching. All absence from classes is registered (this is also the case for our full-time students). You cannot put together a study program consisting of modules from different semesters or programs.

Teaching methods

Dania uses a multi-disciplinary approach to teaching. The classes are a combination of discussion and group-work. Our lectures will not repeat what is written in books, but rather use textbook theories on case examples. This practical approach is also used while writing projects where the focus will be on how theories in fact are used in real life. Therefore, we are working closely with actual companies with solving concrete problems. This practical approach creates more value and hand-on experience for students.

Important dates

Semester dates and holidays: see [Fact Sheet](#)

Module overview:

NB: In 2022, only the 3rd semester will be available to exchange students. From 2023, the program will only be taught in Danish.

	Modules	ECTS	Exams
1 st semester	Network Technology	9	Exam: Written assignment and oral presentation regarding learning objectives in the 1st semester (30 ECTS)
	Embedded Systems	9	
	Programming	7	
	Project management and business understanding	5	
2 nd semester	Network Technology	9	Exam: Written assignment and oral presentation regarding learning objectives in the 2 nd semester (30 ECTS)
	Embedded Systems	9	
	Programming	7	
	Project management and business understanding	5	
3 rd semester	Electives (choose one of the 6 modules): <ul style="list-style-type: none"> • Network Specialist • Cloud Specialist • Penetration Tester • Cybersecurity Specialist • Application Developer • Web Developer 	30	Exam: Written assignment and oral presentation regarding elective learning objectives

Important: Only the two electives that most of our full-degree students choose are going to run. We will know which two at the end of May

Subject to changes

Module descriptions 3rd semester:

Each year a number of local subject elements are offered as electives as described in the annex to this curriculum. **The institution is not required to provide teaching in all electives offered**, but teaching will be provided for an appropriate number of electives, subject to a qualified assessment of both academic merits and any capacity constraints.

Network Specialist

Content

This elective gives the student the knowledge, skill, and competence to design, configure, troubleshoot, and manage enterprise wired and wireless networks. The student will learn to implement security principles, automation, and programmability within and enterprise network, and how to overlay network designs by using software defined solutions.

Recommended prerequisites before choosing the elective:

- CCNA or equivalent knowledge and skill
- DEVASC or equivalent knowledge and skill

Learning goals for Network Specialist Knowledge

Knowledge

- practice and applied theory and methods within enterprise networks

- understanding of practice, centrally applied theory and method and can understand the industry's application of theory and method within enterprise networks
- possible security threats and monitoring of these in enterprise networks
- design network systems with regard to QoS

Skills

The student can:

- apply the subject area's central methods and tools within enterprise networks in connection with design and implementation of networks
- apply skills related to enterprise networks in connection with the construction, testing, maintenance, administration, operation and monitoring of these networks
- select components, describe and implement networks to solve a specific task that requires an enterprise network

Competence

The student can:

- independently and in a structured way acquire new knowledge, skills and competencies in relation to enterprise networks
- participate in professional and interdisciplinary collaboration on needs assessment, analysis, solution proposals, development, design and implementation of enterprise network solutions with a professional approach

ECTS weight

Local subject elective Network Specialist is worth 30 ECTS credits.

Cloud Specialist

Content

This subject element must provide the student with the knowledge, skills and competencies required to design, build and develop IT systems and infrastructure using the cloud computing paradigm. The subject element includes not only the hardware and software related aspects related to cloud computing, but also considerations about security, operation as well as data migration.

Learning goals for Cloud Specialist

Knowledge

The student has knowledge of:

- practice and applied theory and methods in cloud computing
- understanding of practice, centrally applied theory and method and can understand the industry's application of theory and method within cloud computing
- the different types of service models used in connection with cloud computing
- possible security threats in connection with a cloud-based system and how these are addressed

Skills

The student can:

- use the subject area's central methods and tools within cloud computing in connection with the design, planning and implementation of systems based on cloud computing
- apply the skills associated with cloud computing in connection with building, testing, maintenance, administration, operation and monitoring of cloud solutions
- select, describe and implement cloud-based solutions

Competence

The student can:

- independently and in a structured way acquire new knowledge, skills and competencies in relation to cloud-based systems
- participate in professional and interdisciplinary collaboration on needs assessment, analysis, solution proposals, development, design and implementation of cloud solutions with a professional approach

ECTS weight

Local subject elective Cloud Specialist is worth 30 ECTS credits.

Penetration Tester

Content

Students who complete this elective, should by the end of the elective have a strong and deep understanding of various verticals of security, starting with preparing a base and advancing through security concepts and hands-on experience. Students will learn how to move through the steps of the cyber-kill chain from net- work scanning to user privilege escalation and finally securing persistent access.

Learning goals for Penetration Tester

Knowledge

The student has knowledge of:

- Ethical hacking concepts, cyber kill chain concepts, an overview of information security, security controls, and various laws and regulations related to information security
- Footprinting concepts and methodologies and utilizing footprinting tools along with the counter- measures
- Concepts of vulnerability assessment, its types, solutions, and tools
- Mobile device management, mobile platform attack vectors, and vulnerabilities related to Android and iOS systems
- Operational Technology (OT) essentials, threats, attack methodologies and attack prevention. The concept of OT is a new addition
- Recognizing the vulnerabilities in IoT and ensuring the safety of IoT devices
- Cloud computing, threats and security, essentials of container technology and serverless computing

Skills

The student can:

- Understand wireless encryption, wireless hacking, and Bluetooth hacking-related concepts
- Understand encryption algorithms, Public Key Infrastructure (PKI), cryptographic attacks, and crypt- analysis
- Understand Denial of Service (DoS) and Distributed Denial of Service (DDoS) attacks, use cases, and utilize attack and defense tools
- Implement security solutions like firewall, IPS, honeypots, their evasion, and protection
- Perform and identify phases of system hacking, attacking techniques to obtain, escalate, and maintain access on victim along with covering tracks
- Understand and asses malware threats, analysis of various viruses, worms and trojans like Emotet and battling them to prevent data. APT and Fileless Malware concepts have been introduced to this domain
- Perform network scans, host, and port discovery by utilizing different scanning tools

Competence

The student can:

- Perform enumeration techniques that now includes NFS enumeration and related tools, DNS cache snooping, and DNSSEC Zone walking along with the countermeasures
- Understand concepts and techniques of packet sniffing as well as counter measures against them
- Apply social engineering concepts and related terminologies like identity theft, impersonation, insider threats, social engineering techniques, and countermeasures
- Understand web server and web application-based attacks, methodologies
- Perform SQL injection, hijacking, and evasion techniques
- Craft a comprehensive report for a customer, documenting the findings, make recommendations that reflects the customers' needs and select an appropriate communication strategy designed to the receiver

ECTS weight

Local subject elective Penetration Tester is worth 30 ECTS credits.

Cybersecurity Analyst

Content

This subject element must provide the student with the knowledge, skills and competencies required to design, build and develop IT systems and IT infrastructure, taking into account the general IT security.

Recommended prerequisites before choosing the elective:

- Familiarity with Ethernet and TCP/IP networking
- Working knowledge of the Windows and Linux operating systems
- Familiarity with basics of networking security concepts
- Familiarity with basics of networking automation concepts

Learning goals for Cybersecurity Analyst

Knowledge

The student has knowledge of:

- Possible security threats in connection with IT systems and how these are addressed
- Practice and applied theory and methods in IT security
- The industry's application of theory, methods and practice within IT security

Skill

The student can:

- use the subject area's central methods and tools within IT security in connection with the design, planning and implementation of complex network solutions
- apply the skills related to IT security in connection with building, testing, maintenance, administration, operation and monitoring of network solutions
- assess practical issues and set up and choose solutions within network security
- convey practical IT security issues and solutions to partners and users

Competence

The student can:

- participate in professional and interdisciplinary collaboration on the preparation of IT security strategy and policies with a professional approach
- independently and in a structured way acquire new knowledge, skills and competencies in relation to network security as well as IT security in general

ECTS weight

Local subject elective Cybersecurity Analyst is worth 30 ECTS credits.

Application Developer

Content

Students must understand the software engineering concepts used to develop Object Oriented software with UML using the Unified Process, and to understand how to come from a problem to the final solution. This involves requirement capturing (Use Cases and non-functional requirements), analysis, domain models, interaction diagrams, design classes, design patterns etc. Overall, the aim is to enable the students to understand and master the concepts and techniques of object-oriented system development and programming, including Client/Server programming.

Learning goals for application developer

Knowledge

The student has:

- Knowledge of Abstraction and requirements capturing
- Knowledge of Unified Process and S.O.L.I.D Design principles
- Knowledge of the difference between software development and programming
- Knowledge of various distributed system types (e.g., client/server, peer-to-peer)
- Knowledge of the 3-tier architecture
- Knowledge of various distributed communication methods

Skill

The student can:

- Use UML to document requirements, analysis, and design artefacts
- Use Unified Process in combination with agile software development
- Use the S.O.L.I.D principles on design models
- Create a domain model from a problem description and requirement specification and the elements in the model
- Create and evaluate architectural design models in UML
- Choose middleware for a given distributed system or embedded system.
- Implement thread-safe classes and multi-threaded programs
- Implement systems using client-server technologies

Competence

The student can:

- Understand a problem and be able to make a requirement specification with use Cases and non-functional requirements
- Design the architecture of a distributed system using the 3-tier model
- Design and implement a distributed system and on different platforms using various middleware solutions.
- Implement programs in a chosen programming using correct design patterns and middleware solutions
- Apply design for test principles according to the test pyramid, both theoretically and practically test software using different testing techniques

ECTS weight

Local subject elective Application Developer is worth 30 ECTS credits.

Web Developer

Content

This elective comprises the development and modelling of web applications, including architecture, robustness, internet, and web protocols, use of debugging techniques and techniques for installation and maintenance. The subject area also includes version control, quality assurance, data security, data storage, data modelling and exchange of data sources based on recognized standards.

Learning goals for Web Developer

Knowledge

The student knowledge of:

- Web architecture and design patterns
- Development methods in web development
- In practice, methods, and systems for version control, and data storage, modelling, exchange, security, and quality assurance
- Practice, applied theory, and methods of designing user experiences, and reflect upon the web developer's practice in designing user experiences
- Aesthetics and trends in interaction design

Skill

The student can:

- Master all phases of development including planning, developing, and implementing web applications based on specific development wishes, as well as evaluate practice-based and theoretical problems and select and justify relevant solution models in relation to the development of web applications
- Master a suitable programming language for the development of web applications
- Use and model data sources as well as justify proposals for solutions
- Implement and evaluate web user interfaces as well as justify and communicate solution proposals to collaborative partners and users
- Use relevant theories and methods for the quality assurance of all phases of development
- Apply methods and tools for quality assurance in the development process, as well as evaluate and justify the choice of specific tools
- Use methods and tools to design user experiences for relevant target groups with the involvement of users
- Communicate their choice of methods and tools used in the development process and practice-based and specialist problems in the design of user experiences and communicate central problems to collaborative partners and users

Competence

The student can:

- Handle complex web development and must be able to handle complex and development-oriented situations in web development
- Independently enter professional and interdisciplinary cooperation with a professional approach and take responsibility within the framework of professional ethics in relation to web programming
- Manage development platforms and environments in the development process of advanced web applications
- Handle complex design processes based on analysis and planning
- Both independently and in groups, understand the design and organization of user interfaces and user experiences for complex systems

- Evaluate and justify the choice of a suitable programming language and relevant methods for the implementation of web applications

ECTS weight

Local subject elective Web Developer is worth 30 ECTS credits.