A Level Preparation: Information Technologies
Module Code: DLAPITE

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	DLFSWE01_E		10	300 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Thorsten Fröhlich (A Level Preparation: Information Technologies AS) / Prof. Dr. Markus C. Hemmer (A Level Preparation: Information Technologies A)

Contributing Courses to Module

- A Level Preparation: Information Technologies AS (DLAPITE01)
- A Level Preparation: Information Technologies A (DLAPITE02)

Module Exam Type	
Module Exam	**Split Exam**
	A Level Preparation: Information Technologies AS
	• Study Format "Distance Learning": Exam
	A Level Preparation: Information Technologies A
	• Study Format "Distance Learning": Exam
Weight of Module	
see curriculum	

Module Contents

A Level Preparation: Information Technologies AS

- Data processing and information
- Hardware and software
- Monitoring and control
- Algorithms and flow charts
- eSecurity
- The digital divide
- Expert systems
- Spreadsheets
- Modeling
- Database and file concepts
- Sound and video editing

A Level Preparation: Information Technologies A

- IT in society and emerging technologies
- Communications technology
- Project management
- Life cycle management
- Mail merge
- Graphics creation and animation
- Programming for the web

Learning Outcomes

A Level Preparation: Information Technologies AS

On successful completion, students will be able to

- understand the impact of all aspects of our lives through the application of technology to process information.
- see how hardware and software interact with each other in an IT system.
- apply basic IT-related techniques on practical examples
- know how computer systems are connected to form networks to share data and resources.
- understand the internet as a global communications network that uses standardized communications protocols for connecting computers worldwide and sharing information in many different forms.
- know how information systems are developed within a planned cycle of stages that cover the system's initial development and continue through to its scheduled updating or redevelopment.
- be informed about new and emerging technologies and consider how they affect everyday life.

A Level Preparation: Information Technologies A

On successful completion, students will be able to

- assess the impact of information technologies on society and social development
- know and understand the principles of computer networking
- understand project planning, organization, tools, and assessment
- analyse and design software development lifecycles
- develop form letters and apply mail merging
- apply fundamental image editing and animation techniques
- understand the structure and syntax of HTML web pages and script languages

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

A Level Preparation: Information Technologies AS

Course Code: DLAPITE01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
	English		5	DLFSWE01_E

Course Description

The course is to help students prepare for Cambridge International AS Level Information Technology tests. The course communicates the necessary basics to complete the tests. With the help of the individual contents and instructions for self-study and self-testing, efficient preparation for passing the Cambridge International AS Information Technology test occurs. Students benefit from different learning forms to understand the particular areas of information technology. All learning forms have the same goal: to deepen and store knowledge using practical examples. Practical tasks can be reviewed in tutorials and discussed with qualified tutors. The content of the AS-Level topics is assumed knowledge for the A-Level components.

Course Outcomes

On successful completion, students will be able to

- understand the impact of all aspects of our lives through the application of technology to process information.
- see how hardware and software interact with each other in an IT system.
- apply basic IT-related techniques on practical examples
- know how computer systems are connected to form networks to share data and resources.
- understand the internet as a global communications network that uses standardized communications protocols for connecting computers worldwide and sharing information in many different forms.
- know how information systems are developed within a planned cycle of stages that cover the system's initial development and continue through to its scheduled updating or redevelopment.
- be informed about new and emerging technologies and consider how they affect everyday life.

Contents

1. Data processing and information
    1.1 Data and information
    1.2 Quality of information
    1.3 Encryption
    1.4 Checking the accuracy of data
    1.5 Data processing

10. Database and file concepts
     10.1 Create a database
     10.2 Normalization to third normal form (3NF)
     10.3 Data dictionary
     10.4 Query selection
     10.5 File and data management

11. Sound and video editing
     11.1 Sound and video editing

Literature
Compulsory Reading
Further Reading
▪ Brown, G. & Sargent, B. (2021). Cambridge International AS Level Information Technology Student's Book. Student Edition. Hodder Education. ▪ Long P., Lawrey S. & Ellis, V. (2022) Cambridge International AS and A level IT. Coursebook with Digital Access. Cambridge University Press. ▪ Waller, D. (2020). Cambridge International AS & A Level IT Practical Skills Workbook with Digital Access (2 Years). Cambridge University Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

A Level Preparation: Information Technologies A

Course Code: DLAPITE02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
	English		5	DLFSWE01_E

Course Description

The course is to help students preparing for Cambridge International A-Level Information Technology tests. It communicates the necessary basics to complete the tests and provides the foundation for continuing self-studies to efficiently prepare for passing the test. The course assumes knowledge of the Cambridge International AS-Level and additionally covers commonly used information technologies, their concepts, development, applications, and their impact on societal development.Students benefit from different learning forms to understand the selected areas of information technology. All learning forms have the same goal: to deepen and store knowledge using practical examples. Practical tasks can be reviewed in tutorials and discussed with qualified tutors.

Course Outcomes

On successful completion, students will be able to

- assess the impact of information technologies on society and social development
- know and understand the principles of computer networking
- understand project planning, organization, tools, and assessment
- analyse and design software development lifecycles
- develop form letters and apply mail merging
- apply fundamental image editing and animation techniques
- understand the structure and syntax of HTML web pages and script languages

Contents

1. IT in society and emerging technologies
    1.1 Digital currencies and data mining
    1.2 Social networking services and platforms
    1.3 The impact of IT on society, monitoring and surveillance
    1.4 Technology enhanced learning

2. New and emerging technologies

 2.1 Near Field Communication

 2.2 Ultra HD television systems

 2.3 Artificial Intelligence and robotics

 2.4 Augmented and virtual reality

 2.5 Computer-assisted translation

 2.6 Holographic imaging and 3D printing

3. Communications technology

 3.1 Network hardware, servers, and clouds

 3.2 Network protocols

 3.3 Switching, routing, and flow control

 3.4 Wireless transmission and mobile communication systems

 3.5 Network security and disaster recovery management

4. Project management

 4.1 The stages of the project life cycle

 4.2 Project management software

 4.3 Tools and techniques for project management tasks

5. Life cycle management

 5.1 Analysis and design

 5.2 Documentation

 5.3 Development and testing

 5.4 Implementation, evaluation, and maintenance

 5.5 Prototyping and methods of software development

6. Mail merge

 6.1 Master documents and forms

 6.2 Rules and fields

 6.3 Standard letters and labels

7. Graphics creation and animation

 7.1 Common graphics skills

 7.2 Text, vector, and bitmap images

 7.3 Compression

8. Animation and morphing

    8.1 Frames and canvas operations

    8.2 Timings & coordinates

    8.3 Tweening and morphing

    8.4 Sound implementation

9. Programming for the web

    9.1 HTML and CSS

    9.2 JavaScript

    9.3 Operators and functions

Literature

Compulsory Reading

Further Reading

- Brown, G., Sargent, B., Gillinder, B. & White, A. (2021). Cambridge International A Level Information Technology Student's book. Student Edition. Hodder Education.
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Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
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☑ Course Book	☐ Creative Lab
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