



Academia de Studii Economice
Departamentul de Informatică și Cibernetică Economică

Calea Dorobanți, 15-17, Sector 1, București, 010552 (camera 2314)

Tel.: +40 21 319 19 00, ext. 319, 336, Fax: +40 21 311 20 66

www.dice.ase.ro

**Contest topics for ASSOCIATE PROFESSOR,
position no. 69, 2016-2017**

Object Oriented Programming:

1. Procedural programming elements: functions, transfer parameters, pointers to data and functions, memory classes.
2. Object Oriented concepts: class, object, constructor, destructor, access methods, this pointer. Declaration and implementation of methods in a class and outside it.
3. Copy constructor, operator = overload, objects in HEAP and namespaces.
4. Conversions between different types of objects (cast operator, operator = and copy constructor), vector objects, *const* modifier, static members (static), constant objects, constant pointers to objects and pointers to constant objects.
5. Try-catch mechanism in C ++.
6. Operator overloading.
7. Inheritance. Polymorphism.
8. Virtual functions, overriding functions, multiple inheritance.
9. RTTI type mechanisms, multiple inheritance and dynamic cast.
10. Template functions and classes. Methods of encapsulation template functions and classes in static libraries / dynamic.
11. Input/Output operations using streams (console and files). The concepts of serialization / deserialization of objects.
12. Standard Template Library (STL), containers, iterators and algorithms. Classes for string, map, list, vector, etc.

Multimedia (Romanian and English teaching)

1. Introductory notions and essential definitions in the multimedia field.
2. The concept of multimedia. Classes of multimedia applications. Examples of multimedia applications in commerce, tourism, services.
3. Hardware and software required to develop and use multimedia applications. Technologies and equipment.
4. Introduction to image processing. Fundamental concepts.
5. The image. Matrix and vector images. Compression and decompression of images.
6. Elements of human visual perception. Model of an image. Relations between pixels. Color representation. Red-Green-Blue (RGB) system. The Cyan-Magenta-Yellow-Black (CMYK) system. Hue-Saturation-Brightness (HSB) system.
7. Image file formats.
8. Animation. Graphics. Tools for image acquisition and processing
9. Sound. Audio formats. Compression standards for sound files. Tools for acquiring and processing audio sequences.



Academia de Studii Economice
Departamentul de Informatică și Cibernetică Economică

Calea Dorobanți, 15-17, Sector 1, București, 010552 (camera 2314)

Tel.: +40 21 319 19 00, ext. 319, 336, Fax: +40 21 311 20 66

www.dice.ase.ro

10. Digital video. Convert from analog video to digital video. Create video on your computer. Algorithms and video compression standards. Video sequence processing tools.
11. General elements of client side application development: JavaScript language, CSS language, HTML5 elements

References

Object Oriented Programming

1. Ion Smeureanu, Marian Dardala , Programarea orientata obiect in limbajul C++, CISON, Bucuresti, 2002, România
2. Ion Smeureanu, Programarea in limbajul C/C++, CISON, Bucuresti, 2001, România
3. Herbert Schildt, C++ manual complet, Teora, Bucuresti, România
4. Bjarne Stroustrup , The C++ Programming Language, 3rd Edition, Addison-Wesley

Multimedia

1. Dârdală, M., Smeureanu, I., Reveiu, A, Tehnologii multimedia, Editura ASE, Bucuresti, 2008, România
2. HTTP - Hypertext Transfer Protocol, http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol
3. HTML, http://www.w3.org/community/webed/wiki/Main_Page#HTML_beginnings
4. HTML5, <https://www.w3.org/TR/html5/>
5. CSS, http://www.w3.org/community/webed/wiki/Main_Page#CSS
6. JavaScript Guide, Mozilla Developer Network, <https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide>
7. David Flanagan, jQuery Pocket Reference, O'Reilly, 2011
8. David Flanagan, Canvas Pocket Reference, O'Reilly, 2011