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| **University** | TECHNICAL UNIVERSITY OF CIVIL ENGINEERING BUCHAREST | | |
| **Faculty** | HYDROTECHNICS | | |
| **Department** | HYDROTECHNICAL ENGINEERING | | |
| **Position in the staffing table** | Position 15 | | |
| **Teaching position** | UNIVERSITY ASSOCIATE PROFESSOR | | |
| **Subjects in the curriculum** | Instrumentation, Web Technologies, Databases, Computer Programming and Programming Languages I, Diploma (syntheses + guidance) | | |
| **Scientific field** | Systems Engineering (Automation and Applied Informatics) | | |
| **Job description** | University Associate Professor, position 15 – Department of Hydrotechnical Engineering – Permanent university associate professor position including teaching and research activities specific to the subjects in the curriculum included in the advertised position. | | |
| **Associated duties/ activities** | Teaching activities consist of delivering courses and practical applications in laboratory/seminar/project settings. Didactic preparation includes: Development of teaching manuals; Development of other modern laboratory guidance supports necessary for the educational process. Other activities included in the teaching duties: Support activities for exams for the subjects in the curriculum included in the advertised position; Checking papers and projects; Consultations for the subjects in the curriculum included in the advertised position; Supervision of graduation papers. Scientific research in the field of Systems Engineering and related fields. | | |
| **Minimum salary** |  | | |
| **Competition schedule** | ***Published on the website www.utcb.ro*** | | |
| **Date of announcement publication in the official gazette** | ***M.O. Part III No. 143/30.04.2024*** | | |
| Registration period | Start | End |  |
| ***30.04.2024*** | ***06.06.2024*** |
| **Lecture date** | *05.07.2024* | | |
| **Lecture time** | *12:00* | | |
| **Lecture location** | Bucharest, UTCB | | |
| Contest tests period | Start | End |  |
| ***01.07.2024*** | ***05.07.2024*** |
| Results communication period | Start | End |  |
| ***05.07.2024*** | ***05.07.2024*** |
| Contestation period | Start | End |  |
| ***08.07.2024*** | ***10.07.2024*** |
| **Contests subjects** | Introduction to Analog Electronics: Fundamental concepts of electronic devices. Semiconductor diodes: Presentation of the PN junction, forward-biased diode, reverse-biased diode, ideal diode equation, technical characteristics of the rectifier diode. Zener diode, Varicap diode, Photodiode, Light-emitting diode (LED). Bipolar Junction Transistor (BJT): Properties, operating principle, study of different operating modes, characteristics, biasing of bipolar junction transistors, determination of the static operating point, and methods of stabilizing it. Field-Effect Transistor (FET): Properties, operating principle, characteristics, biasing of field-effect transistors. Thyristor and Triac: Properties, operating principle, static characteristic, applications with thyristor and triac.  World Wide Web (WWW): Definition and brief history of the World Wide Web service; Uniform Resource Identifiers (URI); Uniform Resource Locator (URL); Architecture, HTTP protocol; Tools for developing web applications.  HTML Markup Language: Definitions, history; Characteristics and features; Structure of an HTML document; Examples. Specific HTML elements: Lists in HTML (ordered, unordered, definition type); Tables and their formatting; Frames and their formatting; HTML forms (description of attributes, form elements, multiline edit fields, selection lists, labels); Image maps; Web architecture; DIV and SPAN tags; Examples.  The CSS Standard: Definitions, description, and CSS syntax; Description of CSS levels; CSS levels 1, 2, 3 and examples; Styles and attributes used in CSS; Examples. CSS3 Standard: Definitions, description, and CSS3 syntax; Description of CSS3 modules; Borders, background, text effects, and fonts in CSS3 with examples.  JavaScript Language: Definitions, history, characterization, and features; Including external files; Variables, instructions, operators, and functions in JavaScript with examples.  PHP Language: Definitions, history, characteristics, and features; Vocabulary, symbols, expressions, instructions, and comments; Data types, variables, constants, and operators; Conditional instructions, functions, composite data types; Using strings, working with directories and files; Using data entered in XHTML forms; POST and GET methods; Dynamic content generation; Examples.  Practical Applications: Learning the Entity-Relationship model; Learning the relational model; Learning the database normalization technique.  Creating a relational database using a computer: tables, table associations, referential integrity constraints, column and table validation constraints.  Practical examples of database queries using a computer; Creating indexes and views; Creating transactions; Creating functions and stored procedures; Creating triggers.  Developing a software application with a connection to an ORACLE database; Practical examples of database administration and data recovery after an incident.  Basic Elements of the C/C++ Language: Structure of a C/C++ program, preprocessing, and using the #include directive; Using functions from standard libraries, stages of developing a C/C++ program. Variables, predefined data types, variable declarations; Reading data from the keyboard and displaying data on the screen; Practical application examples. Expressions and operators, fundamental control structures: expressions and operators; Expression evaluation and type conversions; Fundamental control structures: alternative structures (if, switch) and repetitive structures (while and do-while); Practical application examples. Fundamental control structures (continued), structured data types, repetitive structures: for loop, one-dimensional and two-dimensional arrays: declaration, access, initialization, looping through elements of a vector and matrix; Basic array operations, examples; Practical application examples. Pointers, strings; Pointer declaration and operations with pointers, pointer arithmetic; Pointers and one-dimensional arrays; Pointers and two-dimensional arrays; String declaration, initialization, processing; Pointers and strings; Array of strings; Reading and displaying strings from the keyboard; Practical application examples. Standard library functions for working with strings in C/C++: Copying strings; Determining string length; String concatenation; String comparison; Finding the first occurrence of a character in a string; Finding the last occurrence of a character in a string; Finding the first occurrence of a substring; Separating substrings by delimiters; Other functions; Practical application examples. Structures and other user-defined types: struct data type: creating and declaring struct type variables, initializing and accessing a struct member; Reading and displaying struct type variables from the keyboard; Using nested structures; Declaring an array of structures and accessing a member of the array; Union data type; Enum data type; Practical application examples. Dynamic memory allocation. Functions in C/C++ used: Standard library functions for dynamic memory allocation: malloc, calloc, free, realloc; Dynamic memory allocation in C++ using the new operator and memory release using the delete operator; Practical application examples. User-defined functions: function definition and prototype, function call; Global and local variables; Passing parameters to user-defined functions by value and by reference; Passing one-dimensional array parameters; Passing two-dimensional array parameters; Passing struct type parameters to a function; Creating functions with a variable number of parameters of multiple types; main() function parameters; Practical application examples. Files: input/output streams; text and binary files; opening/closing a file in C; reading and writing data to a text and binary file in C; file position pointer; working with directories in C; declaring, opening, closing files in C++; reading and writing data in file streams; determining the current position in a file stream; redirecting input and output in C; redirecting input and output in C++; Practical application examples. | | |
| **Bibliography** | 1. Pasca Sever, Tomescu Niculae, Sztojanov Istvan: Electronica analogica si digitala, Dispozitive si circuite electronice fundamentale, volumul 1, Editura Albastra, 2008;  2. Crăciun A.: Dispozitive şi circuite electronice, Editura Universi¬tăţii Transilvania Braşov, 2003;  3. Dascălu D. Turic L. Hoffman I.: Circuite electronice, EDP Bucureşti,1981;  4. Damachi E. s.a.: Electronică, EDP Bucureşti, 1979;  5. Gray P., Meyer E.: Circuite integrate analogice - analiză si proiectare, Ed. Tehnică, Bucureşti,1983, 1997;  6. Iliescu, C., Szabo, W., s.a.: Masurari electrice si electronice, Ed. Sidactica si Pedagocica, Bucuresti, 1988.  7. Sabin Buraga, Proiectarea in WEB 2.0, editura Polirom, 2007 ;  8. Liviu Dumitrascu, Crearea site-urilor Web cu Dreamweaver MX 2004 si Dreamweaver 8, editura Universitatii din Ploiesti, 2006 ;  9. Sabin Buraga, Tehnologii XML, editura Polirom, 2006 ;  10. Liviu Dumitrascu, Crearea site-urilor WEB, editura Teora, 2006 ;  11. Sabin Buraga, Proiectarea site-urilor WEB (editia a doua), editura Polirom, 2005 ;  12. Liviu Dumitrascu, Liviu Ionita, Gabriel Marcu, Studii de caz si exercitii rezolvate pentru crearea site-urilor web cu Dreamweaver MX 2004 , editura Universitatii din Ploiesti, 2005 ;  13. Ionel Simion, Proiectarea P aginilor W EB, editura Teora, 2005 ;  14. Sabin Buraga, Semantic WEB, editura MatrixRom, 2004 ;  15. Liviu Dumitrascu, JavaScript, editura Universitatii din Ploiesti, 2004 ;  16. Marc Campbell, Animatia pe WEB, editura B.I.C. ALL, 2004  17. Carstoiu D.: Sisteme de baze de date distribuite, Editura CONSPRESS, 2013  18. Dollinger R., Andron L., Baze de date si gestiunea tranzactiilor, Editura Albastra, 2006  19. DATE C. J., Baze de date, Editia a opta, Editura Plus, 2005  20. Fotache M., Proiectarea bazelor de date. Normalizare si postnormalizare. Implementari SQL si Oracle, Editura Polirom, 2005  21. Fotache M., SQL. Dialecte DB2, Oracle, PostgreSQL si SQL Server, Editura Polirom, 2009  22. Forta B., SQL in lectii de 10 minute, Editura Teora, 2004  23. Hernandez M., Proiectarea bazelor de date, Editura Teora, 2003  26. Ostafi S. Fl.: Baze de date. Suport de curs, Editura CONSPRESS, 2013  27. Sabau Gh., Avram V., Bologa R., Munteanu M., Dardala M., Baze de date, Editura Matrixrom, 2008  28. Intuneric A., Sichim C., Teste grila C/C++, Editura Polirom, 2003  29. Jamsa K, Klander L., Totul despre C si C++, editura Teora, 2003  30. Stefanescu D., Programarea in limbajele C/C++. Notiuni de baza, Editura Matrixrom, 2004  31. Logofatu D., Bazele programarii in C-Aplicatii, Editura Polirom, 2006 | | |
| **Description of the contest procedure** | According to the contest Methodology of the Technical University of Civil Engineering Bucharest | | |
| **Document list** | According to the contest Methodology of the Technical University of Civil Engineering Bucharest | | |
| **Address for submitting the contest dossier** | Technical University of Civil Engineering Bucharest, Lacul Tei Avenue, 122-124, District 2, RO 020396, University Secretariat department | | |