

## GAU, Faculty of Engineering

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|--|--|-----------|
| <b>Course Unit Title</b>   | File Organization and Access Methods   |           |
| <b>Course Unit Code</b>  | CEN304   |           |
| <b>Type of Course Unit</b>   | Compulsory, computer engineering students  |           |
| <b>Level of Course Unit</b>  | BSc  |           |
| <b>National Credits</b>  | 3  |           |
| <b>Number of ECTS Credits Allocated</b>  | 6 ECTS   |           |
| <b>Theoretical (hour/week)</b>   | 2  |           |
| <b>Practice (hour/week)</b>  | -  |           |
| <b>Laboratory (hour/week)</b>  | 2  |           |
| <b>Year of Study</b>   | 3  |           |
| <b>Semester when the course unit is delivered</b>  | 6  |           |
| <b>Mode of Delivery</b>  | Face to Face, Laboratory Experiments, Web  |           |
| <b>Language of Instruction</b>   | English  |           |
| <b>Prerequisites and co-requisites</b>   | -  |           |
| <b>Recommended Optional Programme Components</b>   | Computer programming skills  |           |
| <b>Objectives of the Course</b>  |  |           |
| <ul style="list-style-type: none"> <li>➤ Conceptual overview of sequential, indexed and indexed-sequential file access</li> <li>➤ Teaching search methods in sorted sequential files</li> <li>➤ Teaching methods of index table creation</li> <li>➤ Teaching sort methods</li> </ul> |  |           |
| <b>Learning Outcomes</b>   |  |           |
| When this course has been completed the student should be able to  |  | Assesment |
| 1  | Have a clear understanding about file accessing techniques   | 1         |
| 2  | Know and apply basic search techniques on sorted sequential files  | 1,5       |
| 3  | Know and apply basic sort techniques on files  | 1,5       |
| 4  | Create and manage a structured file system for an application  | 1,5       |
| 5  | Know and apply indexing methods to a structured file   | 1,5       |
| <i>Assesment Methods:</i> 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work  |  |           |
| <b>Course's Contribution to Program</b>  |  |           |
|  |  | CL        |
| 1  | Ability to understand and apply knowledge of mathematics, science, and engineering   | 3         |
| 2  | Ability to design and conduct experiments as well as to analyze and interpret data   | 3         |
| 3  | Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct  | 1         |
| 4  | Ability to apply systems thinking in problem solving and system design   | 5         |
| 5  | Knowledge of contemporary issues while continuing to engage in lifelong learning   | 1         |
| 6  | Ability to use the techniques, skills and modern engineering tools necessary for engineering practice  | 1         |
| 7  | Ability to express their ideas and findings, in written and oral form  | 2         |
| 8  | Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints  | 1         |
| 9  | Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner   | 3         |
| 10   | To apply fundamental concepts of software design, database design, data processing and artificial intelligence in the modeling, designing, implementing, testing and deploying software solutions. | 4         |
| 11   | Ability to analyse and design hardware systems by applying the principles of embedded systems, microprocessors, computer networks, distributed systems and data communication.                     | 4         |
| <i>CL (Contribution Level):</i> 1.Very Low, 2.Low, 3.Moderate, 4.High, 5.Very High   |  |           |

| <b>Course Contents</b>   |        |  |                      |
|--|--------|--|----------------------|
| Week   |        |  | Exams                |
| 1  |        | Introduction to file systems and usage of files                |                      |
| 2  |        | Sequential File Organization                                   |                      |
| 3  |        | Sequential Search Methods in Sorted Files                      |                      |
| 4  |        | Direct File Organization.                                      | Extra Quiz           |
| 5  |        | Static Tree Structures (EISCH, LICH etc.).                     |                      |
| 6  |        | Static & Dynamic Tree Structures (Prg. Overflow & Comp. Chng). |                      |
| 7  |        | Dynamic Tree Structures (Brent's & Binary Insertion).          | Quiz                 |
| 8  |        |  | Midterm              |
| 9  |        | Filter Application (Bloom) and Text Search (Boyer & Moore)     |                      |
| 10   |        | Sorting Techniques   |                      |
| 11   |        | Secondary Key Retrieval (Inverted Files)                       |                      |
| 12   |        | Bits of Information  |                      |
| 13   |        | B-Tree and Derivatives   | Quiz                 |
| 14   |        |  | Lab. Exam            |
| 15   |        |  | Final                |
| <b>Recommended Sources</b>   |        |  |                      |
| <b>Textbook:</b> File Organization and Processing, A.L.Tharp, John Wiley & Sons, 1998, ISBN: 0-471-60521-2                                       |        |  |                      |
| <b>Supplementary Material (s):</b> File Structures: An Object-Oriented Approach with C++, M.J.Folk, B.Zoellick, G.Riccardi, Addison Wesley, 1997 |        |  |                      |
| <b>Assessment</b>  |        |  |                      |
| Attendance & E-learning  | 10%    |  |                      |
| Homeworks  | 5%     |  |                      |
| Laboratory   | 15%    | Lab Grade= ((Lab Exam + Lab Performance) × Lab Attendance)     |                      |
| Midterm Exam   | 30%    | Written Exam   |                      |
| Quiz   | 5%     | Written Exam   |                      |
| Final Exam   | 35%    | Written Exam   |                      |
| Total  | 100%   |  |                      |
| <b>ECTS Allocated Based on the Student Workload</b>  |        |  |                      |
| Activities   | Number | Duration (hour)  | Total Workload(hour) |
| Course duration in class (including the Exam week)   | 15     | 2  | 30                   |
| Labs and Tutorials   | 12     | 2  | 24                   |
| Assignments  | 10     | 3  | 30                   |
| E-Learning Activities  | -      | -  | -                    |
| Project/Presentation/Report Writing  | -      | -  | -                    |
| Quizzes  | 2      | 12   | 12                   |
| Lab Exams  | 1      | 12   | 12                   |
| Midterm Examination  | 1      | 15   | 15                   |
| Final Examination  | 1      | 15   | 15                   |
| Self Study   | 14     | 2  | 28                   |
| Total Workload   |        |  | 166                  |
| Total Workload/30 (h)  |        |  | 5.53                 |
| ECTS Credit of the Course  |        |  | 6                    |