**GAU, School of Aviation, Civil Aviation and Cabin Services**

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| **Course Unit Title** | | | | General Aircraft Knowledge | | | | |
| **Course Unit Code** | | | | CACS105 | | | | |
| **Type of Course Unit** | | | | Compulsory, Civil Aviation and Cabin Services | | | | |
| **Level of Course Unit** | | | | 1st Year | | | | |
| **National Credits** | | | | 3 | | | | |
| **Number of ECTS Credits Allocated** | | | | 5 ECTS | | | | |
| **Theoretical (hour/week)** | | | | 3 | | | | |
| **Practice (hour/week)** | | | | - | | | | |
| **Laboratory (hour/week)** | | | | - | | | | |
| **Year of Study** | | | | 1 | | | | |
| **Semester when the course unit is delivered** | | | | 1 | | | | |
| **Course Coordinator** | | | |  | | | | |
| **Name of Lecturer (s)** | | | |  | | | | |
| **Name of Assistant (s)** | | | |  | | | | |
| **Mode of Delivery** | | | | Face to Face | | | | |
| **Language of Instruction** | | | | English | | | | |
| **Prerequisites and co-requisites** | | | |  | | | | |
| **Recommended Optional Programme Components** | | | | Basic background of Aircraft structures and flight principles | | | | |
| **Objectives of the Course:** | | | | | | | | |
| * Teaching an introduction to flight principles. * Teaching the basic components of an aircraft. * Teaching the fundamental working principles of an aircraft engine. * Teaching the basic control surfaces and forces. | | | | | | | | |
| **Course Description** | | | | | | | | |
| This course presents fundamental knowledge of lift and drag for aircraft, high speed sub sonic aerodynamics and the performance of aircraft particular emphasis on turbojet and turboprop aircraft with a maximum take-off weight (MTOW). | | | | | | | | |
| **Course Contents** | | | | | | | | |
| Week |  | | | | | | | Exams |
| 1 | Summary of Aviation History | | | | | | |  |
| 2 | Introduction to Flight Theory, Atmosphere, Bernoulli Principles, Density, and temperature. | | | | | | |  |
| 3 | Introduction to Airfoil Concepts: Airfoil Design, wing aerodynamics, relative wind and angle of attack. | | | | | | |  |
| 4 | Flight Principles: Forces acting on the Airplane, stall, pressure distribution, Lift, Drag, and L/D calculations (Tutorial class) | | | | | | |  |
| 5 | Impact of different surface and environmental parameters for aircraft performance | | | | | | |  |
| 6 | Airplane Structures: Airplane Components, wing, empennage, power plant, fuselage, and landing gear | | | | | | |  |
| 7 | Exercises, Tutorials and Revision Class | | | | | | |  |
| 8 | Midterm Exam | | | | | | | Midterm |
| 9 | Incompressible flow around wings, Prandtl’s lifting line theory, induced angle and down-wash, upswept wings, swept wings. | | | | | | |  |
| 10 | Aircraft Stability and Control, primary control devices, secondary control devices, side effects, positive, negative and neutral stability. | | | | | | |  |
| 11 | Aircraft Propulsion system, Engine Types, How engine works. | | | | | | |  |
| 12 | Introduction to Flight Mechanics: Take-off and Landing Performance | | | | | | |  |
| 13 | Introduction to Flight Mechanics II: Climb Performance | | | | | | |  |
| 14 | Revision, Exercises and Tutorial Class | | | | | | |  |
| 15 | Final Exam | | | | | | | Final |
| **Recommended Sources** | | | | | | | | |
| **Textbook:** Gale Craig, “Introduction to Aerodynamics”, 1st edition, Regenerative Press, 2003.  **Supplementary Material(s):** John D. Anderson, “Fundamental of Aerodynamics”, 5th edition, Mc Graw Hill, 2011. | | | | | | | | |
| **Assessment** | | | | | | | | |
| Attendance | | 5% |  | | | | | |
| Assignments | | 45% |  | | | | | |
| Project-Seminar | | 0% |  | | | | | |
| Midterm Exam | | 45% | Written | | | | | |
| Quizzes | | 0% |  | | | | | |
| Final Exam | | 50% | Written | | | | | |
| Total | | 100% |  | | | | | |
| **ECTS Allocated Based on the Student Workload** | | | | | | | | |
| Activities | | | | | Number | Duration (hour) | Total Workload (hour) | |
| Hours per week (Theoretical) | | | | | 15 | 3 | 45 | |
| Presenting of observations and tutorials as report | | | | | 5 | 5 | 25 | |
| Preparation of the homework | | | | | 5 | 5 | 25 | |
| Mid Term | | | | | 2 | 11 | 22 | |
| Supervision | | | | | 1 | 17 | 17 | |
| Final Exam | | | | | 1 | 22 | 22 | |
| Total Workload | | | | | | | 156 | |
| Total Workload/30 (h) | | | | | | | 5.2 | |
| ECTS Credit of the Course | | | | | | | 5 | |