2014 - 2015

NEWPORT UNIVERSITY CED

Latvia, European Union

Exclusively On-line Education for Adults

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A WELCOME FROM THE CHAIRMAN

Education is in the process of major change. Innovations in technology and teaching methodology are being given an opportunity to work for the benefit of the students.

Non-formal Adult Education through online is a lifelong learning process for those who need time flexibility in education, are finding increased popularity and acceptance in most works of life.

The primary focus of Newport University CED is to benefit the student and to help that student reach his or her educational objective in the shortest time frame allowable and at a reasonable cost.

The objective is to produce competent, professional people who are academically prepared, eager and able to face the challenges offered by today's society.

We believe that by keeping the student's needs foremost in mind, both the student and the institution will benefit to the utmost.

As a student, and as an alumnus of Newport you can continue to take pride in the objectives, philosophies and accomplishments of your institution.

Sincerely,

Prof. Dr. Eduard Evreinov
Chairman
Academic Council
Newport University CED

Prof. Eduard Evreinov is famous for his work in informatics, especially for his development for an area of study focusing on homogeneous Computing systems, structures and mediums. These results were commended by Lenin prize (N2), the highest scientific award in the former Soviet Union in the year 1957. He has M.S. degrees in communication, automation, computer science, mathematics, philosophy and Ph.D. degrees in computer science, mathematics and Grand Ph.D. degrees in computer science, physics and mathematics and information science. He is also the Grand Master of the World Order "Science. Education. Culture". He is the President of the International Center of Informatization, European Academy of Informatization, World Information-Distributed University and World Distributed University; Vice-President and Chairman of the Trustee Council of the International Informatization Academy, former Deputy Director of the Siberian Institute of Mathematics of the Academy of Sciences.

A WELCOME FROM THE EXECUTIVE PRESIDENT

Welcome to Newport University CED, Latvia, EU.

The decision to pursue highest education at Newport University CED is a step into an oasis of opportunity. Distinct in its blend of tradition and innovation, Newport is the pioneer in the area of distributed-based (distance/on-line and approved support center) education system, providing quality education to all, both students and mature adults at affordable prices.

As we continue to meet this goal and challenge ourselves to reach towards new ones, my focus on your success remains unwavering. Excellent facilities, qualified, dedicated and caring faculty and various opportunities to interact with fellow students around the globe are all key ingredients in this unique opportunity.

I congratulate you to become a part of our growing family around the world.

Sincerely,

Dr. Chowdhury Mrinal Ahmed
Executive President
Newport University CED

Dr. Chowdhury Mrinal Ahmed is a creative problem-solver and motivated team leader with strong practical organizational skills that promote effectiveness in spite of job-related pressures. He is an expert in Total Quality Management and dedicated in training personnel and highly proficient in quality management. He is a goal-driven performer with a Doctor in Business in Administration, which he pursued after obtaining his Master in Business Administration. He also hold a LL.B (hon's) degree in Law and practice and research Corporate Laws.

ABOUT NEWPORT UNIVERSITY CED

Introduction

Newport University CED is a comprehensive Adult Education (Online/Distance) institution. This catalog was designed to provide sufficient information to both current and prospective future students about Newport University CED's academic degree programs, library services, student services, tuition & fees with refund policy, admissions and graduation requirements etc. The university publishes its catalogue annually mid of November. This catalogue is valid from July 15, 2013 –July 14, 2014. The University reserves the right to review and revise the contents of this catalog and make any changes at any time, as deemed necessary. If any changes take place, all departments, students, faculty members and other academic units will be duly notified.

Our History

Here at Newport University CED, we offer aspiring students and professionals an opportunity to shape their careers and futures. It has always been our goal to provide brilliant minds an education that is worth both their time and money and with theestablishment of Newport University CED, we believe that we have accomplished this. Newport University CED was incorporated at Riga city in the Republic of Latvia, European Union in 2009 as an autonomous Non-formal Adult Education Department of the World Distributed University in affiliation with the Tomsk State University founded in 1878 in Tomsk, Russia. It was the first Siberian Imperial University. In light of its commitment to provide the best education for its students, the University currently offers 8 degree programs in two schools. Moreover, the University also aims to empower its graduates and alumni as potential business and technology leaders. We subscribe to the vision that by providing the best education in business and technology. Newport University CED will help shape the future of these fields through its graduates.

Mission Statement

Newport University CED offers American style of education and dedicated to uniting people through knowledge without regard to the societal boundaries that separate us. We are committed to molding and training students to become highly skilled professionals in any business industry. Finally, the University sees its role as helping the students build their knowledge, skills and professionalism for a society that demands, as well as those of their families and communities as a responsible citizenry.

University Vision Statement

Newport University CED believes that the faculty and students relationship is that of mutual responsibility, with the learning outcomes shared by everyone involved in the process will continually engage in continuous learning, improving professional practice, and self-assessment in order to provide the highest form of service to the community. The graduates of this academic institution will provide proactive professional services that would effect in a cross disciplinary team.

Legal Status

Newport University CED incorporated (No. 4003630619) with its registered office at Riga city in the Republic of Latvia for administration of the Non-formal Adult Education courses as a Department of the World Distributed University and Tomsk State University of Russia and administrate its courses by on-line education methodologies to confer academic and professional courses in higher education and has a supporting office at Dhaka city in the Republic of Bangladesh. The institution also support its Approved Support Centers to confer Diploma, Bachelor, Master and Doctoral degrees to its students/candidates, who successfully qualify for those awards.

UNIVERSITY GOALS & OBJECTIVES

to contribute services that support a unique online experience for preparing graduates (Bachelor through Doctoral degrees) with superior communication skills (both verbal and written);

to present quality online degree programs that are focused on academic achievement and personal and professional growth;

to provide comprehensive student services that encourage and enable all students to be successful learns, so that one's own practice can be evaluated;.

to function within the organizational structures and, if necessary, seek and implement appropriate organizational modifications so that our graduates are recognized as outstanding business leaders andsuperb educators;

to utilize appropriate technology for innovative educational programs services and operations to support teaching and learning;

to promote professional development through continuing education and accelerate leadership by intensive curricular formation;

to maintain efficient and effective administrative services and facilities to support all programs of the institution. Foster community relationship that facilitate partnering for mutual success.

to relentlessly generate a new breed of self-directed, competitive business and educational leaders; and

TUITION FREE ONLINE BBA-MBA STUDY OPPORTUNITY PROJECT

Newport University CED (NUCED) is an Adult (online) educational institution of World Distributed University and Tomsk State University devoted to providing universal access to tuition free quality online post-secondary business education for the deprived citizens around the globe. The vision of Newport University CED is grounded in the belief that universal access to education is a key ingredient in the promotion of world peace and global economic development.

Since its opening on 05th August, 2009, Newport University CED has made great strides as the world's first non-for-profit, tuition-free online business education provider *(a charitable project initiated by the Executive President Dr. Chowdhury Mrinal Ahmed of the institution's non-profit acitvities, besides the for-profit activities, to ensure Tuition Free Online Business Education for the deprived citizens around the globe)*. The Executive President and the institution have also been recognized for this work on behalf of the several international civil organization recognized by the United Nations.

The goal is to educate all willing, within one generation, in business education (BBA-MBA). What if anyone could choose a business program of study and have the immediate opportunity to learn? Suppose a learner was eager to pursue a bachelor degree in business administration. One would locate any internet-enabled computer, streaming multimedia enabled phone, tablet or other supported device to access specific educational, government or other sponsoring websites that supports the download of previously recorded video courses. Upon downloading the specific courses, the student would learn from them. This scenario represents how to implement sustainable free global education at minimum cost.

Under the proposed free internet educational video lectures and tools from undergraduate business education levels to the graduate level will be permanently available, covering every trade skill, certification and academic discipline. These videos are

perhaps university lectures recorded in class or the lecturer refers to a predetermined script while incorporating effective learning assistance technologies such as chalkboards, visual projections and computer interactions. These videos are tools for primary self-study or supplementary learning.

The student would learn at any desired moment and for as long as preferred. When the student feels ready, sample tests, practice drills and detailed solutions are available. Upon completion of the sample test, the student self-grades the test using the detailed solutions. The student can repeat any portion of the lectures at any time and submit feedback and questions on the web. Upon compiling student questions and feedback over time, successive videos can be recorded and made available to clarify most requested topics, theories and to provide solutions to the most challenging and essential problems to master. The student repeats this process from freshman to graduate years, as every relevant recorded lecture is available at any time. Free academic video examples are available on the world wide web and provide evidence that this proposal is feasible.

Besides the university use *Engrade* a comprehensive Education Management System and a collaborative learning environment. A suite of award-winning, innovative productivity tools connects students and educators with important information crucial to student success while allowing school administrators real-time access to data for better tracking of institutional effectiveness. Educators and school administrators can manage courses through *Engrade*, assess school work with *RubiStar Rubrics* and much more, from a single location.

Naturally, this system implies that the opportunity to take proctored exams for formal credit or certification will be available. Nevertheless, anyone can pursue

academic and other scholarly or hobby interests without time delay to fulfill any level of proficiency, including college higher education. Many parents will use the free videos to refresh or learn topics to coach their children. This is how the human race care for its own with free higher education.

Newport University CED provides a high-quality online academic experience with modern electronic text, audio and video communications technologies, academic tutors and mentors, suitable in its scope and depth to the challenges of the 21st century. The University assesses and evaluates all aspects of its academic model on an ongoing basis.

Only Processing Fees, No Tuition Fees

Application and Registration Processing Fees

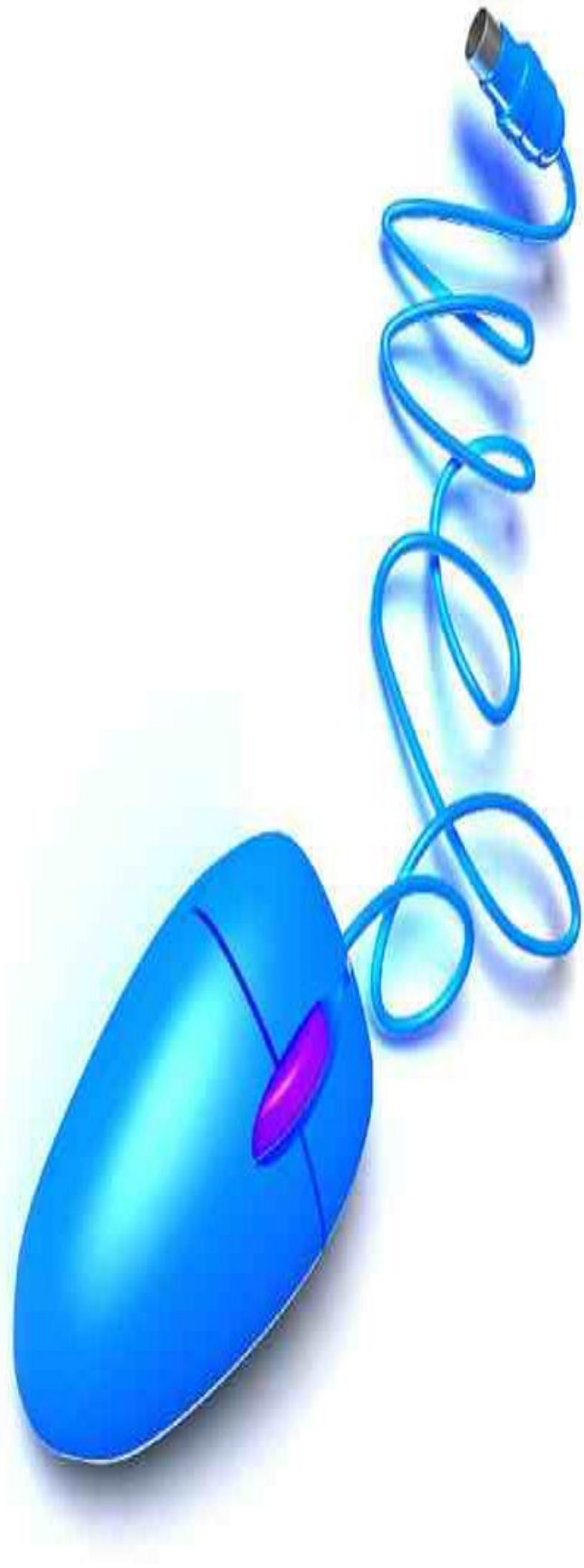
Newport University CED charges an Application and Registration Processing Fee of US$100 (BBA or MBA) in order to cover the cost of processing each application as well as remain sustainable.

Online Proctoring and Exam Fees

Newport University CED charges an Online Proctoring Fees as well as the cost of exams at US$ 17.5 per end-of courses (BBA- 40 courses, 120 credits; MBA- 12 courses, 36 credits).

Certification and Handeling Fees

Newport University CED charges an Certificate and Transcript Processing and Handeling Fees for the students around the world through international postal service at US$ 100 per program (BBA or MBA).



To achieve the goals and objectives of the Newport University CED, the University is committed to provide its students the best and most modern education. The university fosters the value of lifelong commitment to learning through the use of our innovative on-line modules that barriers while maintaining the standards of quality. At the heart of our goals, the university is intent on utilizing and optimizing research in the fields of business and education for the advancement of its students, faculty and services. Towards the end, we have created programs that address the needs of society without limiting the educational delivery system. Our challenge is to assist student development with programs addressing individual interests as well as the synthesis of thinking and learning. Our faculty provides guided inquiry into the areas of knowledge; which is to challenge attitudes, beliefs and value systems. A Newport University student will successfully acquire and demonstrate breadth and depth of intellectual analytical and critical thinking along with self-expression. Through our faculty members with high experience in diverse fields, the university plans to produce internationally competitive alumni around the world. In addition, the university's aim to develop a worldwide network to help its graduates to establish anywhere in the world.

Grading Standards

Newport University CED uses the grading system outlined below. Term, semester and cumulative grade point averages (GPAs) are calculated at the end of the session. Academic honors and academic progress evaluations – including academic standing– are calculated at the completion of each student's semester/student-centric period. GPAs are calculated using grades from undergraduate-level courses taken at Newport only. Grades and designators are assigned as follows:

Grade	Quality	Marks (%)	Interpretation
A+	4.00	90-100	Outstanding
A	3.75	85-89	Excellent
A-	3.50	80-84	Very Good
B+	3.25	75-79	Good
B	3.00	70-74	Above Average
B-	2.75	65-69	Average
C+	2.50	60-64	Below Average
C	2.25	55-59	Poor
D	2.00	50-54	Pass
F	0.00	00-49	Fail
CBT	0.00		Credit by Transfer
CR*	0.00		Credit
NC	0.00		No Credit
R			Repeat
I			Incomplete
W			Withdraw

*NOTE: Credit (CR) for Undergraduate is equal to C or better; Graduate is equal to a B or better.

Fail, Incomplete and Withdrawals

A student who receives an [F] in a required course must repeat and pass the course, or receive transfer credit for the course, prior to graduation. An [I] signifies that required coursework was not completed during the session of enrollment. Grades of [I] are counted in attempted hours, but are not counted in any GPA computations. All required work must be completed and submitted to the professor by the end of the subsequent session. The [I] must be converted to an [A], [B], [C], [D], [F], [CBT] or [CR]. If course requirements are not satisfied by the deadline, the [I] is converted to an [F]. When the I is converted to a final grade for the course, the grade is applied to the session in which the student took the course. The GPA is recalculated for that session, resulting in different term, semester and cumulative GPAs. A grade of [I] in a prerequisite course does not satisfy the course requirement; thus, the student is administratively dropped from the course for which the prerequisite course was required. Students are notified of dropped courses by email. A [W] appears on transcripts of students who attend all of their courses during the add/drop period and then withdraw from all courses. Students who remain enrolled in courses after the course drop deadline and wish to withdraw from a course must apply to do so through an academic administrator. Students may withdraw at any time prior to the withdrawal deadline, which is Friday of week seven at 11:59 pm. The designator of [W] also appears on transcripts of students who withdraw from individual courses, but will not affect the GPA.

Standards of Academic Progress

Undergraduate and graduate students of Newport University CED must maintain a minimum a cumulative GPA requirement of 2.0 and 3.0 respectively on a 4 point scale to be regarded as competitive toward degree completion. Failure to maintain at least a 2.0 Cumulative GPA on undergraduate level or 3.0 cumulative GPA on graduate level will result in Probation Status for the following grading period. If less than 2.0 GPA for undergraduate level or 3.0 for graduate level has been attained for two consecutive grading periods, the student will be suspended from regular student status or dismissed for not meeting academic proficiency status.

Petition for Grade

All instructors at Newport University CED are required to upload all students' grades into their academic records within 7 days after the course completion. Students may, with sufficient academic grounds, petition that a final grade in a course be reappraised (which may mean the review of specific pieces of tangible work). Non-academic grounds are not relevant for grade reappraisals; petition for grades must be filed using the grades petition form within 30 days from the date the grades were uploaded. The Dean of the applicable school after careful discussions with the applicable instructors will either recommend to the Registrar the approval or denial of such grades petition. Such student (petitioner) will be notified in writing of the dean's decision within 30 days of the receipt of the grade petition.

Course Repetitions

An student may repeat only those courses one tine in which a grade of C, C+, D or Not Passed was received and students who withdraw from a course prior to completion those that may be repeated up to two times. However, if it appears historical that the student chooses withdrawal from a given course more than two times, the course repetition standard will be imposed with the next enrollment.

Advance Standing

An applicant who has attended a particular course of similar nature from any other institution or earn credit by examination, could be exempted from taking the prerequisite courses. Attendance at any and all other institutions must be reported at the time of application and must meet the minimal credit hour requirement for graduation at the particular level of graduation. Failure to indicate, at the time of application, previous registration at another college or university can result in refusal or cancellation of admission.

Family Education Rights and Privacy Act (FERPA)

Newport University CED complies with the Family Educational Rights and Privacy Act (FERPA) of the United States of America. FERPA is a Federal law aimed at protecting the privacy of the education records of the students. Student record privacy has become an issue, especially in online education. But Newport University CED makes sure that it protects the privacy of its students by protecting their education records. In general, we seek written permission from the parents or eligible students before we release any information from an education record of the student. The parents or eligible students have the right to review and inspect the education record, and if they request it, we will provide it. However, we disclose records, without consent and following FERPA regulations, under the following conditions or to the following parties: school officials with legal educational interest, accrediting organizations, other institution to which a student is transferring, specified officials for evaluation or audit or purposes, or to comply with a lawfully issued subpoena or judicial order. Students who believe that the University has not complied with the FERPA regulations can file complaints directly to the U.S department of education at: Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue, SW, Washington, D.C. 20202-8520, USA

Retention of Student Records

The Registrar's Office of Newport University CED maintains a permanent record of academic work completed by each student. Support documents for the academic record are kept for one year. Students can request their transcripts anytime by email to the Registrar's Office. The student records are available at the University administrative office and in the University Portal, which are accessible through PASSWARD protection ONLY by the student who owns the records.

Academic Freedom Policy

Academic freedom and diverse viewpoints are highly valued at the Newport University CED and has implemented "Academic Freedom" to eliminate the factors those may restrict free learning. These aims can be achieved only in that atmosphere of free inquiry and discussion, which has become a tradition of universities and is called "Academic Freedom". This policy gives the professors and the university's officials the right to express their viewpoints on related fields, regardless of the established views or beliefs of the administration and of the students on these issues. Within the bounds of this definition, academic freedom requires that members of the faculty must have complete freedom to study, to learn, to do research, and to communicate the results of these pursuits to others. The students likewise must have freedom of study and discussion and pursue researches which they belief to beneficial in enhancing their skills. The fullest exposure to conflicting opinions is the best insurance against error. All members of the academic community have a responsibility to protect the university as a forum for the free expression of ideas.

Academic Honesty Policy

Newport University CED expects students to be honest in all of their academic work. By enrolling at the institution, students agree to adhere to high standards of academic honesty and integrity and understand that failure to comply with this pledge may result in academic and disciplinary action, up to and including expulsion from the institution. Academic dishonesty is classified as follows: Cheating, Plagiarism, Bribery, Misrepresentation, Conspiracy, Fabrication, Collusion, Duplicate Submission, Academic Misconduct, Improper Computer Use, Improper Online, TeleWeb and Blended course use, Disruptive Behavior, Right to Confidentiality. If an instructor formally charges a student with dishonesty, he/she will discuss the matter with the student. The course instructor has right to one of the following options: withdrawing such student from that course, assigning a failing grade to such student in that course, or referring the case to the academic review board. The student may appeal the charge, in which case a hearing is held and a determination is made by the Academic Review Board. Formal hearings are conducted via telephone conference call. The academic review board is composed of five faculty members appointed by the school dean and headed by the Chair of Academic Review Board. Recommendations made by the academic review board are forwarded to the school dean who has the final right to decision.

Approved Support Centers

TODAY GLOBAL BUSINESS WORLD

- China represents potential business opportunities with its strong, inexpensive labor force and expanding economy.
- India is the leading country where IT and programming solutions have been outsourced.
- Viet Nam became the World Trade Organization's member on 11 January 2007.

As the world progresses towards a global business environment, the demand for quality business training with an international perspective increases. NUCED is here to facilitate this with the help of its ASC.

GOALS

The NUCED ASC program has several goals. Primarily, the program has been developed to ensure that students have access to a quality American business and engineering technology education, regardless of location, cultural, or socio-economic barriers. Other goals include expanding business partner bonds with companies and organizations that recognize the value of an European-American education.

NUCED achieves this goal by building strategic partnerships with companies, organizations, and other institutions of higher learning with access to qualified students. NUCED enjoys bilateral cooperation with ASC on joint international projects around the world, wher computer and internet facilities are not commonly available for the students and some technical training could not be completed only through online, those mandatorely requires practical training.

REQUIREMENTS

NUCED welcomes all eligible candidates to become an ASC to promote excellence through education. To ensure that ASC conduct NUCED's educational affairs ethically and responsibly, NUCED requires that ASC meet the following criteria:

- Possess the appropriate state and local licenses to be legally authorized to provide online educational services.
- Provost must possess the appropriate academic credentials, preferably a terminal degree. This confirms the provost has an understanding of higher education and conveys the appropriate professional image, befitting of an officer of NUCED.
- Embody at least 5 years of higher educational administrative experience. This ensures appropriate experience in marketing/ recruitment, instruction/academic support, and student support/ grievances.
- Ensure that all employees of the ASC, conduct themselves in a manner that exemplifies the obligation to serve as models of personal and professional integrity.

BENEFITS

Companies, organizations, and other institutions of higher learning that participate in the NUCED ASC program will have access to the following benefits:

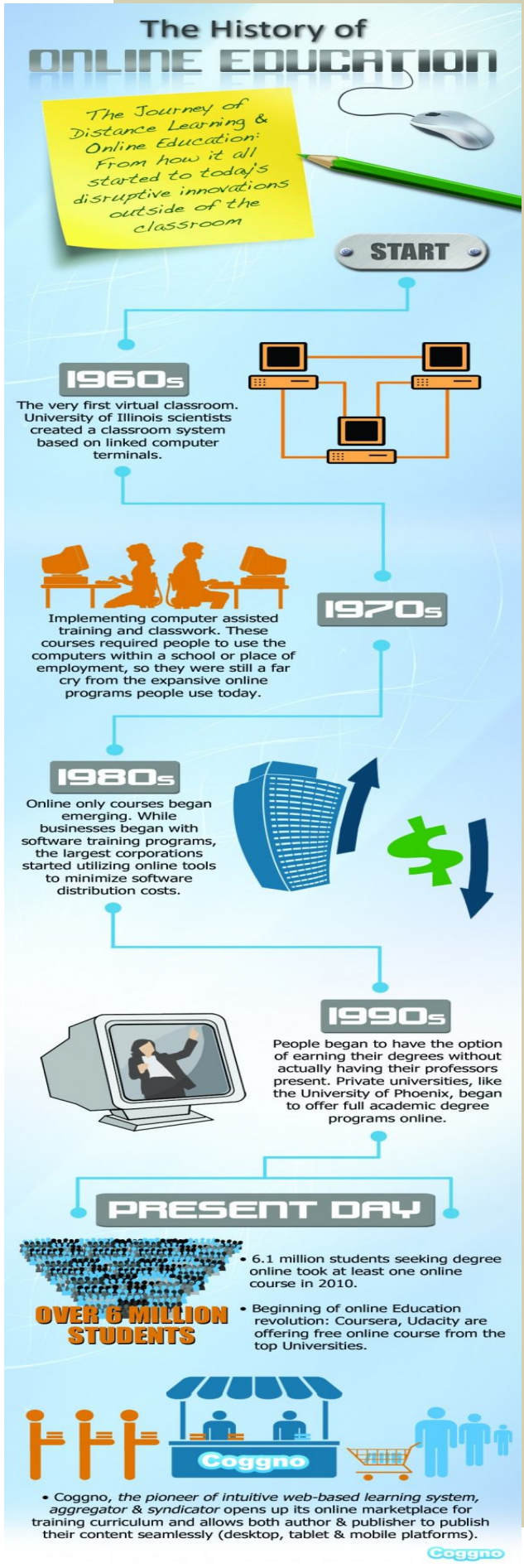
- Your students take courses developed by our faculty through NUCED Online. NUCED uses a cost effective Learning Management System (LMS) which allows NUCED to pass the savings on to our students. 24 hour access to the LMS allows for access anytime through an internet connection. Conveniently study from home, in the evenings, or weekends.
- NUCED provides academic support with our European-American professors who shall facilitate the courses through NUCED Online. Aditionally, your Center's local teachers can provide a support in the areas of face-to-face instruction, tutoring, or translations if needed. Your students get the best of both exposures.
- NUCED's Office of Academics will provide all students with all course materials, notes, power point presentations, etc resources, such as

curriculum customization, textbook recommendations, and course materials are available through online.

- Marketing materials, including mailers, internet links, displays and other collateral materials inform your students about our degree programs. Customized artwork is also available.
- The flexible partnership understands the different needs of different markets. NUCED takes into account market demand, cultural diversity, and your country's economy.

STEPS TO BECOMING AN ASC

1. Application: Complete the ASC application on the computer. Make sure that all areas are completed thoroughly, so that we may fairly assess your institution.
2. Attachments: Submit all requested documentation. Digital format is required to increase efficiency. Scanned/e-mailed copies are ok.
3. Evaluation: After receipt of application & all submitted supporting documents, an investigation will be conducted on the prospective ASC. This will ensure that valid, quality institutions are accepted as an ASC.
4. Deposit: Once approved, a deposit shall be wired to NUCED bank account. This ensures that the ASC is committed towards the partnership and the quality assurance system of the university. Deposit shall be credited towards the account of ASC. This deposit will be retained to cover the initial administrative expenses of set-up, marketing materials, etc.



Proctored Examinations

All final examinations are proctored by ProctorU both individuals and ASC's. Final examinations are online-based and must be completed at the last week of each course. The following is provided to improve test safeguards:

Requirements:

1) Valid Photo ID must be presented at time of the exam(s) (Only government issued IDs are acceptable)

2) Webcam (ProctorU will not administer/proctor your exam without watching you live take exam(s).

3) Microphone with speaker (this will help the Proctor to communicate to the student).

4) Quiet environment (It is recommended that student choose a quiet room/place to take the exam(s). Noisy environment will automatically disqualify the student from the exam(s).

The above further validates the control of the University over the testing procedures and demonstrates that the person taking the test [is] the student who is enrolled into the course of study.

ProctorU
Real People.
Real Proctoring.

Grievance Procedures

Newport University CED is committed in policy, principle, and practice to maintain an environment which is divest of illegal discriminatory behavior and which provides equal opportunity for all persons regardless of race, color, religion, creed, sex, age, marital status, national origin, mental or physical disability, political belief or affiliation, veteran status, sexual orientation, gender identity and expression or genetic information. A messaging system is available for the professors, staffs, and students voice out their grievances. The messaging system will be sort out according to the kind of concern and urgency of the complaints or grievances. Potential concerns could be regarding the course modules, the system of the programs, about the professors and grades.

According to these problems, the concern Dean will schedule an online chat with the concern student in order to better address and hear the concerns and solve it. Evaluations of the professors' performances will be monitored through the activity that goes on online, as the Academic Chairman will have access to message exchanges and any kind of activity between professors and students.

Students' Right

(1) Right to cancel enrollment agreement/or withdraw from their programs and receive refunds (please see the refund policy).
(2) Right to file a grievance petition against any faculty member or staff member.
(3) Right to petition for grades.
(4) Right to their academic records per Family Educational Rights and Privacy Act (FERPA) law.
(5) Right to have a copy of the University's catalogue, and/or brochure.

Inside The Class Room

Newport University CED courses are offered 100% online under the guardianship of live mentors. Each students can access to an online classroom, where all Course materials will be made available. Designed to be completed in a 24-week semester, each online course includes a detailed week-by-week assignment schedule (accessible at the online course site) that guides students through reading and writing assignments and other course activities. During the semester students submit assignments to a mentor and participate in asynchronous course discussions. Mentors facilitate student discussions, providing guidance and focus for the class, grade assignments, discussions and examinations, and submit final grades. There is no specific time when one must be logged on for the class discussion; thus, students can maintain the flexibility of independent learning. However, those who wish may engage in informal discussions with classmates, providing real opportunities to exchange ideas and enhance the informal aspects of learning. Mentors are available for consultation by e-mail or telephone.

Most courses require a textbook (and perhaps a published study guide) and may require readings and media components. Self-assessment tests and exercises often are incorporated into the course materials. A few courses have computer disks containing additional information and exercises. Mentors formally assess academic progress through written assignments, participation in course discussions and proctored and unproctored examinations or some other form of comprehensive assessment.

Midterm and Final Exams

Most online courses have two exams: a midterm taken in Week 12 and a final taken in Week 24. The midterm exam is usually an online, proctored assessment taken via online proctoring and it typically covers material from the first half of the course. The final is usually an online, proctored assessment taken via online proctoring and it typically covers material from the second half of the course. Students register through the Register Office to select a test appointment during the official exam weeks. Some courses have a final paper or project in lieu of a final exam.

Attendance Policy

All courses at Newport University CED are delivered 100% online. It is required that every student login to their classrooms frequently and requires the completion of assignments, examinations and final projects and also require participation in online discussions. The number of assignments varies from course to course. Online courses usually include graded online discussion forums. Students that are not willing to participate fully in this online learning are advised to withdraw from their classes.

Leave of Absence

Leave of absence is granted to students on a request based on the following reasons:

A) Illness*
B) Maternity
C) Bereavement/Funeral
D) Child Care, and/or
E) Military Services*

** Leave of absence may be granted for a period of more than 12 months if necessary.*

Students wishing to be granted a leave of absence must submit a request in writing to the dean of the concern school. Such request requires the student's signature and reasons for such request. All requests for leave of absence must be faxed to the university. Students should note that leave of absence is granted for a maximum of 12 months unless otherwise stated.

UNDERGRADUATE GENERAL EDUCATION REQUIREMENT

General Education

THE PROGRAM:
The objective of the General Education program is to provide the student with a broad academic background by introducing a selection of college-level courses designed to place emphasis on principles and theory from the humanities, the life sciences, the social sciences, and the economics disciplines. With these introductory courses, the students will be better prepared to select the upper division and graduate have High School diploma or G.E.D. exam (General Educational Development)

PROGRAM REQUIREMENTS: 60 units are required for graduation, including 36 units of study applicable to the General Education Requirement, including the prescribed number of units, in the areas of English, (9 units); Natural Science, (6 units); Mathematics, (6 units); Humanities, (6 units); Social Science, (9 units).

International students seeking admission will be required to have their prior transcripts evaluated by a Credential Evaluation Service.

The student must complete a minimum of 15 units while enrolled at Newport University CED. Comprehensive evaluation and counseling are most important at this degree level. Undergraduate students must complete their respective degree programs with a grade point average of C (2.0) or better.

ENGLISH:
GE 100: English Grammar I (3)
GE 101: English Grammar II (3)
GE 103: Written and Oral Communication (3)

COMMUNICATION
COM 210 Composition and Rhetoric (3)
COM 211 Writing about Literature (3)
COM 286 Scientific and Technical Communication (3)

NATURAL SCIENCE: Select two (2) courses
GE 122: Principles of Geology (3)
GE 123: Introduction to Physics (3)
GE 124: General Science (3)
GE 130: Intro to Engineering & Technology (3)

SOCIAL SCIENCE: Select three (3) courses
GE 140: Introduction to Anthropology (3)
GE 141: General Geography (3)
GE 142: Introduction to Political Science (3)
GE 143: Basic Psychology (3)
GE 144: Social Science (3)
GE 145: Introduction to Sociology (3)
GE 170: U.S. History (3)
GE 171: U.S. Constitution (3)

HUMANITIES: Select (2) two courses
GE 150: Introduction to Art (3)
GE 151: Religions of the World (3)
GE 152: Introduction to History (3)
GE 153: Introduction to Literature (3)
GE 154: Introduction to Music (3)
GE 155: Introduction to Philosophy (3)
GE 156: Basic Speech (3)

MATHEMATICS: Select (2) two courses
GE 260:Pre-Analytical Mathematics (3)
GE 261: Introduction to Statistics (3)
GE 262: Introduction to Computer Sciences (3)

ELECTIVES: Select (5) five courses:
Five elective courses for the remaining fifteen (15) required credits, to be selected from any of the above categories, not previously selected for core courses. Courses taken as an elective in the 2nd half of the General Education program may be listed as a 200 level course. Upper division (bachelor electives) may be selected with the permission of the faculty advisor.

GE 001ENGLISH (6)
Level 1: Beginner I (1 units)
This class enables students to acquire the skills necessary to recognize the alphabet and its accompanying sounds. Students develop survival communication in English, obtain fundamental knowledge of English and gain compre-hensible pronunciation skills.
Level 2: Beginner II (1 units)
This level includes introduction to basic grammar, vocabulary development, dictionary use and pronunciation of the phonetic alphabet. It emphasizes American English pronunciation skills.
Level 3: Intermediate I (1 units)
This level introduces students to American idioms and writing structures. It focuses on pronunciation, stress and tone and is designed to improve students' basic communication, writing and grammar skills. It develops speaking and listening at a simple level, where students learn communicative strategies to express thoughts and increase comprehension.
Level 4: Intermediate II (1 units)
This level focuses on writing basic to complex sentences, interpersonal communication skills, intermediate grammar, pronunciation and writing skills. It is also designed to increase students' reading and speaking fluency and comprehension.
Level 5: Advanced I (1 units)
This level focuses on more intensive practice in reading, writing and speaking, fluency in mechanics and reading longer, more complex articles. Students learn high-intermediate grammar and practice in discussion groups.
Level 6: Advanced II (1 units)
This level focuses on more frequent writing practice and advanced grammar. Students start to prepare for the TOEFL or TOEIC examinations and college and university courses.

GE 005 PHYSIC (6)
1. Matter- Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.
2. Mechanics- 2.1 Statics- Forces, moments and couples, representation as vectors; Centre of gravity; Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion; Nature and properties of solid, fluid and gas; Pressure and buoyancy in liquids (barometers). 2.2 Kinetic- Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/ centripetal forces); Periodic motion: pendular movement; Simple theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.
2.3 Dynamics- 2.3.1Mass; Force, inertia, work, power, energy (potential, kinetic and total energy),heat, efficiency; 2.3.2 Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance). 2.4 Fluid dynamics- 2.4.1Specific gravity and density; 2.4.2 Viscosity, fluid resistance, effects of streamlining; Effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.
3. Thermodynamics- 3.1Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin;
Heat definition. 3.2 Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion First and second law of thermodynamics; Gases: ideal gases laws; specific heat atconstant volume and constant pressure, work done by expanding gas; Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.
4. Optics (Light) Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.
5. Wave Motion and Sound Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.

GE 010 MATHEMATICS (6)
1. Arithmetic: Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.
2. Algebra: Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions Linear equations and their solutions;
Indices and powers, negative and fractional indices; Binary and other applicable numbering systems; Simultaneous equations and second degree equations with one unknown; Logarithms;
3. Geometry: Simple geometrical constructions; Graphical representation; nature and uses of graphs, graphs of equations/functions; Simple trigonometry; trigonometrical relationships, use of tables and rectangular and polar coordinates.

GE 015 CHEMISTRY (3)
This course is designed to provide students with a solid understanding of the fundamental principles of chemistry through an integration of lecture. Topics include measurement in chemistry, atomic structure, periodic table, ionic/covalent compounds, nomenclature, balancing chemical equations, calculations using chemical equations, and acid/base chemistry.

GE 016 INTRODUCTION TO ENGINEERING TECHNOLOGY (3)
This course provides the beginning engineering technology student with the basic tools necessary for success in their chosen field. Topics include: survey of engineering technology

careers; problem solving; introduction to engineering mathematical and statistical concepts; technical laboratories, data presentation and report writing; use of scientific calculators; engineering calculations; methology, the use of spreadsheets for data analysis and presentation, and engineering ethics and responsibilities.

GE 017 ENGINEERING DRAWING (3)
Students are introduced to fundamental knowledge and skills such as line work, lettering, scale use, and sketching, multi-view drawings, sectional views, with the basics of manual drafting techniques and the use of drafting equipment. Introduce to a continuation of technical drawing fundamentals. Auxiliary views, descriptive geometry, patterns and developments and dimensioning and notation are emphasized. Welding drawings are covered. Experience with view visualization will prepare the student for CAD fundamentals.

GE 020 BASIC COMPUTER KNOWLEDGE AND APPLICATIONS (3)
A non- technical survey of computer history, hardware, and software. Implications of the use and misuse of computers. The effect of computers on society. Software applications such as word processors, spread sheets, databases, and graphics. Introduction to the Internet and the Internet processing tools. The course emphasizes the use of the World Wide Web as an information broadcasting and retrieval tool.

GE 018 PRINCIPLES OF MANAGEMENT (6)
Develops skills and behaviors necessary for successful supervision of people and their job responsibilities. Emphasis will be placed on real life concepts, personal skill development, applied knowledge and managing human resources. Course content is intended to help managers and supervisors deal with a dramatically changing workplace being affected by technology changes, a more competitive and global marke place, corporate restructuring and the changing nature of work and the workforce. Topics include: Understanding the Managers Job and Work Environment; Building an Effective Organizational Culture; Leading, Directing, and the Application of Authority; Planning, Decision-Making, and Problem-Solving; Human Resource Management, Administrative Management, Organizing, and Controlling.

GE 020 ECONOMICS (3)
Introduction to economics as it applies to the functioning of markets, businesses and households. The class examines how individuals make decisions about how to use scarce resources efficiently and how these decisions affect markets and the overall economy. Effect of government policies on the functioning of markets also is examined.Introduction to economics as it applies to the national and international economy. Topics that the course covers include differences in standards of living across countries, the monetary system and the determinants of inflation, and the factors causing growth and recessions. Examines the ability of the Federal Reserve and other government policy makers to influence the course of the economy.

GE 025 ACCOUNTING (3)
Presents accounting principles and their application to various businesses. Covers the accounting cycle, income determination, and financial reporting. Studies services, merchandising, and internal controls.

GE 030 FINANCE (3)
This course provides a survey of financial theory and practice as it relates to the management and valuation of firms. Topics include: organizational forms, the role of capital markets, the determination of interest rates, financial statement analysis, the time value of money, stock and bond valuation, risk and return, and capital budgeting. This course is a prerequisite for all upper level finance courses and is required for all business students.

GE 035 MARKETING (3)
In this course, students assume the role of a marketing manager and learn how to make effective marketing decisions. Marketing permeates our lives, from the advertising that we are exposed to on a daily basis, to the product decisions we make as consumers, to the need for all of us to communicate with and persuade others in order to accomplish our personal and professional goals. Students go behind the scenes played out in retail, manufacturing, and other marketing organizations to learn how key marketing decisions are made. Students also learn how key marketing concepts, principles, and theories can help marketers make effective decisions.

GE 040 BUSINESS LAW (3)
Learn about the U.S. court systems, including tort law, contracts, agency and employment law, personal property and bailments, real property, and business organizations. Anyone with a small- or medium-size business can benefit greatly from this course.
worthy of respect.

GE 141 GENERAL GEOGRAPHY (3)The regional geography of the world, population agglomerations, scale, culture, physiogeography, site and situations, supernationalism, federations, irredentism, isolated states, geography of languages, nomadism, urban dominance, ecological trilogy, boundaries, feudalism, pluralism, physiological density measure, industrial locations, exchange economy, modernization, buffer states, heartland theory, developed vs. underdeveloped regions, pleistocene cycles, regions of the world: Europe, North America, Central and South America, North Africa and Southeast Asia, Africa, India, China.

GE 142 INTRODUCTION TO POLITICAL SCIENCE (3)
This course is designed to familiarize the student with the basic tenets of politics, political theories and structure.

GE 143 BASIC PSYCHOLOGY (3)
As an introductory course, this course

is designed to familiarize the student with basic concepts, issues, theories dealing with human behavior and its social, physical, and mental determinants. The main emphasis will be placed on human consciousness, learning, memory, thinking, human development, and abnormal behavior.

GE 144 SOCIAL SCIENCE (3)
This course presents some of the works of human culture that have endured over the centuries. The text describes and pictures some of the works in music, the visual arts, literature, and other cultural areas, and will analyze some of the changes in human attitudes toward them. The material points out that the human achievements of our common past tell us much about earlier cultures, both in their differences and in their similarities. It also examines the changes in taste as to what is considered a masterpiece and what has come to be considered barbarian. As part of a study of the science of social values, the course helps in the realization that a masterpiece of art carries with it a surplus of meaning.

GE 145 INTRODUCTION TO SOCIOLOGY(3)
The Living Webster Encyclopedic Dictionary of the English Language defines Sociology to be "The science of the evolution, structure, and functioning of human society; the systematic studies of human institutions and social relationships and the principles underlying their functioning." This course is designed to introduce the student to the science of Sociology.

GE 150 INTRODUCTION TO ART (3)
This course will attempt to remove the formidable barriers to insight between the layman and the art expert. "I don't know anything about art, but I know what I like." is an often repeated stock statement. Taste is part of art history and is a continuous process in which established values are discarded and neglected ones are rediscovered. Works of art are viewed in the context of time and circumstance. This course will concentrate upon introducing the student to the art of the ages. A new statement might evolve: "I know something about art, I know what I like, and I am more aware of the creative potential within myself."

GE 151 RELIGIONS OF THE WORLD (3)
An introductory survey of movements and themes in the major religions of the world

GE 152 INTRODUCTION TO HISTORY (3)
Contemporary events fit into old patterns and rearrange them so swiftly that the printed account is only a shaft of light on what becomes the possible truths of history. No single memory, no single accounting, can relay what has happened and the student is asked simply to open awareness to what might have been. Predicated upon this understanding, this is a history of the modern world.

GE 153 INTRODUCTION TO LITERATURE (3)
The student will
be guided through the literary maze of fiction, poetry, and drama as a creative participant. "All men live in truth and stand in need of expression. The man is only half himself, the other half is his expression." [EMERSON]

GE 154 INTRODUCTION TO MUSIC (3) This course is designed to introduce the student to a general knowledge of music. "The meaning of song goes deep. Who is there, that, in logical words, can express the effect music has on us? A kind of inarticulate, unfathomable speech, which leads us to the edge of the infinite, and lets us for moments gaze into that!" [Carlyle]

GE 155 INTRODUCTION TO PHILOSOPHY (3)Philosophy is, literally, the love of wisdom. This course will introduce elements of Ethics, Social Philosophy, Political Philosophy, Philosophy of Art, Philosophy of Religion, the theory of knowledge and metaphysics.

GE 156 BASIC SPEECH (3)
This course is designed to introduce the student to the basic principles of speech communication.

GE 160 PRE-ANALYTICAL MATHEMATICS (3)
This course covers Basic Algebra, Geometry, Trigonometry, and number theory; Fundamentals on Mathematical Logic; Elements of Combinatorics; Basic Statistics.

GE 161 INTRODUCTION TO STATISTICS (3)
This course presents the following subjects: histograms, percentiles, arithmetic mean, random numbers, normal curve, dichotomous, population, error factor, standard deviation, dispersion, correlation factor, regression, covariance, chisquare tests, binomial distribution, variance, sequential analysis, up and down method, discrete distribution.

GE 162 INTRODUCTION TO COMPUTER SCIENCE (3)
This course covers the topics of components of information systems, history of computers, generations of computers, components of micro-computers, the number systems, binary systems, types of computers, peripherals, input/output systems, lower and higher level languages, operating systems, data structures, database management systems, data communication systems, system life cycle, non-procedural languages, spreadsheets, and word-processing.

GE 170 U.S. HISTORY (3)
The purpose of this course is to introduce the student to the experience that "The best thing we derive from history is the enthusiasm that it raises in us." [Goethe]

GE 171 U.S. CONSTITUTION (3)
This course was written to fill a

special need. For many years, in the United States, there has been a gradual drifting away from the Founding Fathers' original success formula. This has resulted in some of their most unique contributions for afree and prosperous society becoming lost or misunderstood. Therefore, there has been a need to review the history and development of the making of America, in order to recapture the brilliant precepts which made America's people the first free people in modern times.

GE 180 BASIC ACCOUNTING (3)
This course is a study of the role That accounting plays in dealing with the problems of modern society. It includes financial reports, their construction and use; managerial uses of accounting data for inventory costing, planning and control; cost behavior analysis, inventory control, program planning, and budgeting systems, income taxes, and price- level adjustments.

Master's Degree Thesis

The primary purpose of the Newport University CED's Master's thesis requirement is to demonstrate the graduate student's capacity and ability to conduct research in his or her field. The University has set the following guidelines for graduate students writing Master's theses to complete their degree. Each student should work closely with her or his advisor to come up with a thesis project of high standards.

The Thesis Advisor and the Reader

The thesis advisor will guide the Master's student. It is the student's responsibility to consult with his/her Dean and obtain the agreement of a member to serve in this capacity. Basically, the thesis advisor must be a Faculty member of the Master's degree program under which the project is to be completed. The student can make alternate arrangements, but this is only by approval of the applicable Dean and the Program Director. After the consultation with the thesis advisor, the student should choose a second reader (any member of the graduate faculty). He or she must provide the second reader a draft of his or her work following a strict timetable so that the student can incorporate criticisms and suggestions made by the second reader into the thesis.

Choosing a Thesis Topic

The initial and arguably the most important step in completing a thesis is how to choose a thesis topic. The thesis advisor guides the Master's student in selecting which thesis subject and problem to work on. The student should choose a topic that is of such intense and direct interest to him or her so that enthusiasm is maintained even in times of extreme pressure and adversity. The graduate student, however, should realize that there are various possible subjects that are highly suitable. It is always a mistake to spend too much time finding the "optimum thesis topic".

In addition, the research topic must give the student an opportunity to learn not only about the subject being investigated, but also about the proper research methods used. The thesis topic should not be so remote from the student's field of special training; since acquiring the necessary background can result in an excessive delay. Also, the research topic should add, however modestly, to the professional knowledge in the chosen field. After choosing the topic to focus on, the student is required to submit the "Thesis Subject" form, which describes the general topic and problem of the thesis. The thesis director and the thesis advisor should sign this form. At this time, the student should have already identified the proposed second reader. The student then submits to the thesis director an outline of the thesis and the thesis proposal, usually a draft of the first chapter. While the University does not require minimum length for the proposal, it should contain adequate details to clearly define and justify the research problem, as well as the proposed research plan. The student may include preliminary results if available. At this time, the student should have already shown the second reader the general scope of the project and asked the reader to discuss the outline with him or her. If the reader approves of the thesis outline and proposal, the student then proceeds to writing the thesis.

Writing the First Draft

The student must make sure that the thesis reflects the guidance of the advisor. There is no minimum length for the thesis, but it should contain comprehensive detail to clearly define and justify the research problem and the significance of the study, present a comprehensive literature review, discuss the research design and methodology used, as well as the analysis of the results, conclusions, and practical and theoretical recommendations. While the University expects the Master's thesis to contribute to the body of knowledge in the chosen field, the student should also emphasize the competent application of the research design and methodology. The thesis must use the most current edition of Publication Manual of the American Psychological Association format in typeface, headings, number of pages, and spacing. The referencing and citation style as well as the use of graphs,

table, figures, and photos should follow the APA guidelines. The student advisor and thesis readers should carefully consult and rigorously adhere to theguidelines set by the APA. The student should not use other handbooks, except with the permission of the thesis advisor. If a thesis is not prepared in accordance with the latest APA version, the advisor will return the thesis unread and ask the student to correct in-text citations, reference lists, and other matters regarding formatting before the thesis reader starts reading and examining the manuscript. Students are expected to uphold high standards of research ethics, including honesty and integrity in coding, collecting, and analyzing data. The Master's thesismust be an original work. Plagiarism is considered an academic crime. It constitutes grounds for failing the master's; the University may apply more serious sanctions if circumstances permit them. It is the responsibility of the student to understand the dangers of plagiarism and why they should avoid it. In order to avoid plagiarism, the University strictly requires the students to use the APA style of documentation, requiring the proper use of the author-date method of documentation. All references used in the text must be included in the reference list found at the end of the manuscript.

The Final Draft

Advisor reports to the Graduate Office about progress made by the student on the thesis and the general quality of his or her work. The student submits the final draft to the thesis advisor. He or she should have identified the third reader by this time. The thesis advisor then sends copies and thesis evaluation forms to the second and third readers. They either approve or disapprove the copy of the thesis depending on the agreement within the Committee. If disapproved, the student needs to revise the thesis until it meets the standards of the Committee.

Oral Defense

Once the Thesis Committee deems that the student is prepared to defend his or her work, the advisor will complete the oral defense form, indicating the defense teleconference date and those invited, including the committee members, faculty members and Master's students in the appropriate department. In the oral defense, the graduate student participates in a real-time conference with the committees and other guests. The telephone conference call is the standard manner of conferencing. On the day of the oral defense, the teleconference company establishes the conference connection and tape-records the proceedings. During the oral defense, Thesis Committee members present focus questions related to the research. The presentation of each focus question should take about one minute. The master's student will reply to each question. He or she responds in five minutes. Committee members are allowed to give follow-up questions to the student. Each follow-up question should take about one minute for presentation. The student replies to each follow-up question in not more than three minutes. Under special circumstances, alternative methods of oral defense are more appropriate than telephone conference. The thesis adviser can arrange acceptable alternatives such as videoconferences or electronic chat room, rapid exchanges of e-mail, or face-to-face conferences. Under very rare conditions, oral defense of the thesis may be completed by fax or post.

Evaluation

The Master's thesis serves as a demonstration of capacity of the student to conduct original research. The thesis advisor shall evaluate the complete thesis submitted for assessment. As applicable, such factors as the student's independent contribution as well as his or her ability to work on schedule may be an important ground in the evaluation of the thesis. The thesis advis or submits in writing a statement with a proposal for a final grade. The thesis advisor, when preparing the report, may also request statements from the instructor. In cases where the advisor has proposed the grade of "Excellent", "Satisfactory", or "Fail", the Thesis Committee shall consult another University faculty or adjunct professor knowledgeable in the field when deciding on the student's grade.

The Doctoral Dissertation

Student enrolled in Newport University CED doctoral program is required to submit a dissertation to satisfy this important part of the requirements to complete his/her degree. This manuscript is the most critical requirement of the doctoral program because it is a permanent record of the creative effort or independent research that will give a student his or her degree. The best professional practice and academic tradition require this University to share and preserve the student's work with other academics and scholars. In order to do that successfully, we must uphold high standards of scholarship, and we must require that every student meets those standards.

Passing the Comprehensive Examination

Students intending to pursue doctoral degrees must take and passed a comprehensive examination after they have completed their non-dissertation courses, because it is a pre-requisite of the dissertation courses. One of the purposes of this examination is to sufficiently assess students' full knowledge on the dissertation title they wish to research.

Intellectual Requirements

Students should come up with a dissertation that makes an original and significant contribution to the field of study. Students can explore previously neglected primary sources, undertake an interpretation of existing literature or original theoretical analysis, or use primary material to develop their own critique of past and current scholarly arguments. Simply reviewing the books and scholarly articles and materials which students have collected about the topic is not enough. The dissertation should exhibit that students can collect research evidence and consider a particular problem or topic in detail, and also that they understand how their chosen topic supports or debunks the works other scholars have done in the field. The review of related literature should demonstrate how the works of others on the same topic relate to each other and where the students' own work is positioned. In addition, the analysis should demonstrate an awareness of what other researchers and scholars have already said and the implications of their positions and views for the dissertation.

Writing the Dissertation

Newport University CED requires all doctoral students to strictly follow the guidelines of the latest edition of the Publication Manual of the American Psychological Association (APA) format, including guidelines on headings, spacing, margins, typeface, number of pages, citation and reference style, rules in the usage of graphs, figures, tables, and so forth. Doctoral students as well as their dissertation supervisors and examiners should carefully consult and rigorously adhere to the APA Handbook. Students should not use other handbooks except with the permission of their supervisors. If students have not prepared a dissertation draft using an approved APA handbook, the Dissertation Committee will return the manuscript unread and will ask that reference lists, citations, and other matters regarding format be revised before the examiners proceed to work with the dissertation. In addition, students are expected to uphold high standards of research ethics, including honesty and integrity in coding, collecting, and analyzing data. As to the length of the dissertation, this University has no specific requirement. All dissertations must be in English. Newport University CED expects that every dissertation is an original work. Plagiarism is a ground for failing the doctoral program; the University may also apply more serious sanctions if circumstances warrant them. Students are responsible to understand the concept and consequences of plagiarism. In order to avoid plagiarism, the University strictly requires the students to use the APA style of documentation that requires the author-date style of documentation. All references cited in the text must be included in the reference list at the end of the manuscript.

Preliminary Acceptance of the Dissertation

Before the dissertation is sent to the Dissertation Committee, members of the doctoral supervisory committee shall declare to the dissertation supervisor

either: (1) that the work is of adequate quality and substance to warrant that it is ready to be read and reviewed by external examiners, and that the doctoral student is prepared to proceed to the oral defense; or (2) that the work is unsatisfactory, and that the doctoral student is not prepared to proceed to the final oral defense. This preliminary acceptance of student dissertation must be conducted to protect and maintain the reputation of the doctoral programs and this University for excellence in online education. If the supervisory committee considers a dissertation ready for examination by external members, the supervisory committee must complete and sign a form stating the preliminary acceptance of the dissertation to be forwarded to the Academic Unit graduate program designate, who must then complete and submit the same form before external examiners are invited to read and examine the dissertation, and before the scheduled oral defense.

Dissertation Committee

The Dissertation Committee is comprised of two qualified external members (that is, research active). The third committee member is usually a member of the Newport University CED research staff. The dissertation supervisor, in collaboration with the doctoral student, is responsible in forming the Committee. The dissertation supervisor will present the proposed dissertation committee members or external examiners to the Newport University CED's Dissertation Council before the proposal defense. The Dissertation Council will then review the application and make a recommendation to the Dean of the applicable college, who will make the final decision whether the proposed external members are of acceptable standard. The decision is based on three criteria: (1) The member is an expert in the specific area that the doctoral student is focused on, with a strong academic record of high quality works and publications related to the topic. (2) The member normally has successfully graduated their own doctoral students. (3) The member is normally from a department that grants doctorate's degrees. Once approved, the Dean will send a letter to the external members or examiners, inviting them to take on the external role. They can be included in the oral defense using virtual technology.

Oral Defense

Once the Dissertation Committee deems that the student is prepared to defend his or her work, the supervisor will send the oral defense form to the applicable Dean, indicating the defense teleconference date and those invited, including the Dissertation Council, the committee members, faculty members and graduate students in the appropriate department. In the oral defense, the graduate student participates in a real-time conference with the committees and other guests. The telephone conference call is the standard manner of conferencing. During the oral defense, Committee members present focus questions related to the research. Thepresentation of each focus question should take about one minute. The doctoral student will reply to each question. He or she responds in five minutes. Committee members may provide follow-up questions to the student. Each follow-up question should take a minute for presentation. The student replies to each follow-up question in not more than three minutes. Under special circumstances, alternative methods of oral defense are more appropriate than telephone conference. The supervisor can arrange acceptable alternatives such as videoconferences or electronic chat room, rapid exchanges of e-mail, or face-to-face conferences. Under very rare conditions, dissertation defense may be completed by fax or post. Following the completion of the oral defense at which the student passes the dissertation, the candidate makes the needed revisions and submits the approved dissertation within the timelines established by the examination committee, and the Dissertation Committee. If the student fails to submit the final copy and the necessary forms on or before the approved time limit, he or she may not be considered for graduation. After the Dissertation Committee receives the completed dissertation and forms indicating that the student has passed the dissertation and the oral examination, it endorses the candidate.

TRANSFER CREDITS POLICIES

Maximum Number of Transfer Credits Accepted

Military Assessment (ACE)

30 Credits Bachelors

6 Credits Masters
(Must be evaluated as graduate credits)

4 Credits Doctorates
(Must be evaluated as graduate credits)

Each course accepted under this clause would be listed as PASS and carry no GPA designation

Transfer from other Colleges

90 Credits Bachelors

9 Credits Masters

12 Credits Doctorates

Each course accepted under this clause would be listed as Transfer and carry no GPA designation.

Maximum combined Military and/or Transfer credits cannot exceed 90 credits for Bachelors, 9 credits for Masters, and 12 credits for doctorates to be applied toward any degree program. Graduate level credit(s) transfer should not be older than 5 years from the date of entry into Masters/Doctoral program.

Newport University CED accepts credits from accredited colleges or universities. Students that have completed their previous educations at universities/colleges where **English was not the official language** of instruction must forward their transcripts/credentials to any member of the National Association of Credentials Evaluation Services (NACES) for evaluation. Completed credentials evaluation by any member of NACES must be forwarded to the university directly by the agency providing such evaluation service(s). For details about the credential evaluation services, please visit www.naces.org. Newport University CED voluntarily complies with the principles and criteria of Service members Opportunity College (SOC) and will provide full opportunity for inter-institutional transfer of credits received at other SOC Colleges and Universities, to the published limits regarding transfer of credits. Further, American Council on Education (ACE) recommendations will be granted the fullest respect for the transfer of Military acquired Skills and Knowledge.

Credit by Examination

A maximum of 24 undergraduate credits will be accepted toward the degree from Internal and External subject examinations. Newport University CED recognizes the following examination programs: College Level Examination Program (CLEP); Advance Placement Examinations (AP); University of the State of New York Subject Exams; and Thomas A. Edison State Subject Exams.

Experiential Learning

Newport University CED does not sponsor experiential learning. The University awards no credits based on life experience.

ADMISSION REQUIREMENTS

All degree and non-degree seeking students must meet the following admissions requirements before getting admitted or provisionally admitted into the University:

1. A completed application form for admission.

2. A completed letter of intent (for doctoral students) stating which doctorate degree you plan to take and why.

3. Doctorate degree applicants are required to provide documentation attesting to two years of professional experience, in the form of resumes or letters of recommendation.

4. Official transcripts from accredited colleges, universities, or other institutions where you have earned any credit. *Transcripts are to be sent directly to Newport University CED, Unofficial copies of transcripts are accepted for provisional admissions provided that official transcripts are provided within 8 weeks of acceptance. Students admitted under provisional status will not be allowed to take more than 12 credits courses for undergraduate classes or 6-8 credits courses for graduate classes until their provisional status have been removed.*

5. GPA Policies: *(i) Master's degree seeking student must have earned a Bachelor's degree with minimum GPA of 2.0 from accredited colleges or universities. (ii) Doctorate degree seeking student must have earned a Master's degree with minimum GPA of 3.0 from accredited colleges or universities. Doctorate degree seeking student with less than 3.0 GPA of Master's degree from accredited colleges or universities but above 2.49 GPA of Master's degree from accredited colleges or universities are required to take a GRE before conditionally or fully admitted into the required to be admitted, but the admissions committee evaluates each student's performance from GRE and other factors.*

6. Proof of High School Diploma/Certificate or GED (Required from all undergraduate degree seeking students).

7. Proof of O' level (5 subjects) or equivalent (Required from all diploma seeking students).

8. Official documents that support the granting of college or university credit from sources such CLEP, DANTES and college level GED, advanced placement examinations, Achievement Tests (AT), University of the State of New York Subject Exams, and Thomas A. Edison State Subject Exams.

9. Non-traditional transfer credits include:
A. Members of the armed services-credits MUST be evaluated using the American Council on Education (ACE) guide http://militaryguides.acenet.edu/.
B. Formal educational programs and courses sponsored by non-collegiate organizations whosecredits meet the recommendations established by the American Council on Education.

Newport University CED admits students of all races, color, national and ethnic origins and disabilities to all the rights, privileges and activities accorded or made available at the University. Newport University CED does not discriminate on the basis of race, color,national or ethnic origins or disabilities in the administration of itseducational policies, admissions policies or any other University administered program.

10. Students that have completed their previous educations at universities or colleges where English was not the official language of instruction must forward their transcripts/credentials to any member of the National Association of Credentials Evaluation Services (NACES) for evaluation. Credentials evaluated accomplished by any member of NACES must be directly forwarded to the university by the agency providing such evaluation service(s).

11. English Proficiency Requirement: The English proficiency requirement may be met through one of the following ways:

A. Undergraduate applicants (Associate/Bachelors' degrees) whose native language is not English and who have not earned a degree from an appropriately accredited institution whereEnglish is the principal language of instruction must receive a minimum score of 500 on the paper-based Test of English as a Foreign Language (TOEFL PBT), or 61 on the Internet Based Test (IBT), or a 6.0 on the International English Language Test (IELTS).

B. Graduate applicants (Masters' degrees) whose native language is not English and who have not earned a degree from an appropriately accredited institution where English is the principal language of instruction must receive a minimum score of 530 on the paper-based Test of English as a Foreign Language (TOEFL PBT) or 71 on the Internet Based Test (IBT) or 6.5 on the International English Language Test (IELTS).
C. Graduate applicants (Doctorates' degrees) whose native language is not English and who have not earned a degree from an appropriately accredited institution where English is the principal language of instruction must receive a minimum score of 550 on the Test of English as a Foreign Language (TOEFL PBT) or 80 on the Internet Based Test (IBT) or 6.5 on the International

English Language Test (IELTS). Upon submissions of all the required documentations, the admissions committee, composed of four faculty members including the dean and the admissions director, reviews each student's application for admissions. Several factors are considered in deciding on a student's admission. It usually takes seven business days from an application submission date before a student is notified of his or her admissions status. Admitted students are assigned a username and password for online classroom access and information on new students' orientation. Students that are not admitted receive a letter of admissions denial.

Language of Instruction

Prospective students should be aware of the fact that English is the language of instruction at this University. The University emphasizes continued improvement in speaking, writing and reading skills throughout the student's course of study. Students from these countries have met the University's English proficiency requirements: *Antigua and Barbuda, Australia, Bahamas, Bangladesh , Barbados, Belize, Bermuda, Botswana, British, Caribbean, British West Indies, Brunei, Cameroon (English-speaking part), Canada with the exception of Quebec, Cayman Islands, Cook Islands, Dominica, Fiji, The Gambia, Ghana, Gibraltar, Grenada, Guyana, Hong Kong, India, Ireland, Jamaica, Kenya, Lesotho, Liberia, Malawi, Malta, Mauritius, Micronesia, Namibia, Nauru, New Zealand, Nigeria, Niue, Northern Mariannas, Pakistan, Papua-New Guinea, Philippines, St. Christopher-Nevis, St. Lucia, St. Vincent, Seychelles, Sierra Leone, Solomon Islands, South Africa, Sri Lanka, Swaziland, Tanzania, Trinidad – Tobago, Uganda, United Kingdom, United States, Zambia, Zimbabwe*. Students from countries not listed abovemay have to fulfill the University's English proficiency requirement as stated in the enrollments/admissions section. The University **does NOT** provide English language services.

Provisional Admission

Students that have not met all of the admissions requirements are provisional admitted and will be registered to classes provided they provide copies of their unofficial transcripts before being conditionally admitted to the University. The maximum time allowed for students on provisional admissions status to provide their official transcripts is 8 weeks. Students under this provisional admission status that have failed to submit their official transcripts after the maximum allowable time will generally not be eligible to continue taking classes until all their admissions requirements have been met. Students admitted under provisional status will not be allowed to take more than 12 credits courses for undergraduate classes or 6-8 credits courses for graduate classes until their provisional status have been removed.

Re-admissions

Students who are academically suspended, or who have withdrawn from the university for a period of 6 or more months must petition for re-admission. They will file a re-admissions application/petition with an evaluation fee of $ 25.00. Students will be required to justify their decision to return and how they will benefit through the education they will receive.

Non-Degree Students Status

Newport University CED welcomes students that wish to take single courses for the purpose of fulfilling their academic degree programs with other Universities/Colleges or meeting their employments requirements. Students under this category are classified as non-degree seeking students. Admission as non-degree seeking does not guarantee regular admissions into the University academic programs. Non-degree seeking students interested to change their status into degree seeking should follow the normal University's admissions procedures. Transfer credits should apply only when applicable to the program requirements a student is enrolled.

Students that are in good academic and financial status with the University are registered to courses by the Registrar's office. Good academic status is maintaining a minimum GPA of 2.0 for Undergraduate degree programs and 3.0 for graduate degree programs at every quarter. Good financial status is given to students who (i) are in full compliance with payment arrangements entered into with the University; and, (ii) have fully paid their tuition fees. Students who are on academic probation are also eligible to take classes.

Course Load

Undergraduate degree students should not register for more than 6 courses (18 credits) per semester unless approved by the Academic Dean. Graduate degree students should not register for more than 4 courses per semester unless approved by the Academic Dean. It is expected that every student will register every semester for at least two course to maintain enrollment status and to avoid administrative withdrawal from their programs. Exceptions may be granted to students who are on a leave of absence.

Academic Calendar

Newport University CED operates on 8 weeks session that begins on every other month from January of each year.

GRADUATION REQUIREMENTS

Students who are two sessions (16 weeks) away from meeting their graduation requirements are required to petition for graduation. A fee of $300 shall apply for each graduation application and registration. The graduation application form is available via students' portal. Below are the minimum graduation requirements:

Degree Level	**Total Number of Credits**	**GPA** acceptable for graduation	**Possible graduation time- not a promise** *All financial obligations with the University must have been met*	**Maximum time allowed to complete the degree program**
Diplomas' (Aviation Management or Aircraft Maintanence Engg.)	70-72 Total Credits (must include 30 credits in general education courses)	2.0 or better	Can be completed within 30-36 months	72 months
Bachelors' (BBA, or B.Sc.) degree	120-126 Total Credits (must include 60 credits in general education courses)	2.0 or better	Can be completed within 36-48 months	96 months
Masters' (MBA, or M.Sc.) degree	30-36 Total Credits (must include 6 credits in theses)	3.0 or better	Can be completed within 12-18 months	48 months
Doctorates' (DBA, or PhD) degree	43-63 Total Credits (Must include 14 credits in dissertation and 1 credit in comprehensive exam)	3.0 or better	Can be completed within 24-36 months	84 months

Degree Program Extension Policy

Student wishing to be granted extension on his/her degree completion time may do so by completing a degree extension request form (DERF). The academic dean has the highest authority to either approve or deny such extension. Approvals are given to student who is/was on military leave, has/had medical reasons, or has/had family issues. Extensions are granted for a maximum of 12 months unless otherwise noted.

Degree Program Extension Policy

Newport University CED degree conferral dates are at the end of every session.

Academic Honor & Awards

Newport University CED recognizes students that have graduated with high GPAs. An academic honor is awarded in the following manner:

Academic Honor	GPA
President Award	3.95 to 4.00
Golden Award	3.89 to 3.94
Selver Award	3.80 to 3.88
Bronz Award	3.60 to 3.79

Residency Requirements

While there is no residency at Newport University CED required for the degree programs, there is a minimum number of credits required to be taken under the direction of the University; 30 credits for the Bachelors, 30 credits for the Master's degree, and 42 credits for Doctorate degree. Each course completed at Newport University CED is considered as a residence course.

Transcript Request Policy

Student requesting for official transcripts may do so using the transcript request form. First request of official transcript is processed at no charge. Subsequent requests attract a fee of $5 per request. A "hold" on transcripts or course registrations will be placed on students that have not satisfied their financial obligations with the University.

TUITION & FEES

*Application & Registration fee.....$300.00

Re-admission evaluation fee.....$25.00

Library fee per session.....$20.00

Transcript processing fee.....$5.00

Diploma's Course Fee per Credit.....$55.00

Bachelor's Degree Course Fee per Credit.....$65.00

Master's Degree Course Fee per Credit.....$84.00

Doctorate Course Fee per Credit.....$90.00

*Dissertation Fee (Doctorate Program)…….....$375.00

*Thesis Fee (Master's Program).....$285.00

**Online Proctoring Fees (by, ProctorU) …….....$17.50

Return check charge.....$35.00

** One-time payment only*
*** Per Hour*

All fees are to be paid in United States Dollar

Refund Policy

The effective date of official withdrawal from the university is the last day of recorded attendance. The student is expected to notify the registrar in writing prior to or upon the date of complete withdrawal. The University retains an established registration fee equal to 20% of the tuition but not to exceed $200 for students that cancels enrollment agreement after seven business days (excluding Saturday and Sunday). Refunds are to be made only on tuition as follows:

During first week	100% Refund is issued
During second week	80% Refund is issued
During third week	60% Refund is issued
During fourth week	50% Refund is issued
During fifth week	20% Refund is issued
After fifth week	0% Refund is issued

The student has the right to cancel the enrollment agreement and obtain a refund of charges paid through attendance at the first class session, or the seventh day after enrollment, whichever is later. Student may cancel enrollment agreement by submitting written notice of such cancellation to the University at its address shown on the contract, which notice shall be received by the University not later than midnight of the seven business day (excluding Sundays and holidays) following the signing their enrollment agreement or the written notice may be personally or otherwise delivered to the University within that time. In event of dispute over timely notice, the burden to prove service rests on the sender.

RESOURCES

Various student services are offered at Newport University CED. All of them were designed to help the students in the optimum manner possible.

Orientation Program

Newport University CED offers an orientation program wherein new students receive tutorial about the different procedures of the University.

Testing

Testing is done in order to provide students assessment regarding their personalities and careers that could tell them more about their potentials and characteristics as future professionals.

Information Services

Efficient information services are provided in order to ensure the students of their options and right choices in their professional and personal lives.

Personal counseling

Personal counseling is available for students and guides them towards maximum self-realization and development as they become fully integrated and mature individuals.

Follow-up Services

Follow-up services are also available, as the University's services do not cease with just an orientation and one-time counseling.

Academic Advising

Academic advising and career development services are provided to better aid the students. There are also special options for students with disabilities.

Research and Evaluation

Research and evaluation are being done to ensure the effectiveness of the student services that are offered by Newport University CED.

Library Services

The Library Information Resources Network, Inc (LIRN) through its agreement with Newport University CED will supply academic database information via the Internet to Newport University CED's students, faculty and staff. The library collection currently includes resources from Infotrac Search Bank: Academic OneFile, Business and Company Resource Center with PROMT and Newsletters, Computer Database, selected Custom Newspapers, Expanded Academic ASAP, Gale Virtual Reference Library, General Business File ASAP, General OneFile, Health Reference Center Academic, Health and Wellness Resource Center, InfoTrac Criminal Justice Collection, InfoTrac One File LegalTrac, Literature Resource Center - LRC, Newsletters ASAP, Opposing Viewpoints Resource Center, and the Student Resource Center- Gold; ProQuest Direct Psychology Journals; The Electronic Library (selected periodicals, reference books, maps, pictures, newspapers from around the world, and transcripts for news and public affairs broadcasts; and Bowkers: Books in Print and RCLweb. The core package also includes LIRN*Search*, a federated search that covers LIRN provided products. ProQuest's ABI/INFORM Dateline, ABI/INFORM Global, ABI/INFORM/Trade & Industry, and ProQuest General Reference (Research Library Core plus 15 subject modules). ProQuest's Health & Medical Complete and the Nursing & Allied Health Source.

Technical Support Services

Newport University CED students, staff and faculty members may e-mail info@newportuniversity.eu should they experience technical problems with the University's website or online classroom. Technical support services are available 24hrs a day, 7 days a week.

Academic Writing Center (AWC)

Newport University CED aims to equip its students with superior written and oral communication skills. Hence, the university has an Academic Writing Center which will assist students in cultivating quintessential writing skills, at no additional cost. The Newport University CED's Academic Writing Center (AWC) is a writing lab accessible online 24 hours a day, 7 days a week, to the university's students. Outstanding writing skills are indispensable to students who strive for professional and scholastic success and the AWC can help them write in a manner that is comprehensible, concise, structured, cohesive and articulate. Through the AWC, our students have the tool that will enable them to communicate excellently, providing them an advantage as they prepare to enter their chosen professional work environments. The AWC is staffed by professionals who have attained exemplary scholastic achievements, from reputable universities.

AWC Services

(1) **Paper Review**

Most of University's course requisites entail considerable writing on various research papers like essays, critiques, case studies, term papers, theses, and dissertations. The AWC offers review services to be handled by a staff of competent and experienced professionals, who have had extensive training in guiding students in their writing assignments. Students may upload their papers at the appropriate section provided in the university's students' portal, and within 24 to 48 hours, they will receive a feeBUSck on their paper(s) pertaining to grammar and usage, citation, format structures, and general sentence construction. The reviewed paper will be completed with comments, done in text of a different color, so that the suggested changes are easily detected. Students are free to submit multiple papers, if needed.

(2) **Plagiarism Check**

Newport University CED has a stringent policy against plagiarism of any kind, and cautions students to submit only plagiarism-free papers. If in doubt, the students may upload their papers at the appropriate section provided in the university's students' portal, where the AWC review team can check for plagiarism using special software. Within two hours of uploading, the students mayexpect results on the plagiarism check done on their papers. Students are encouraged to take advantage of the AWC plagiarism check before submitting their papers to instructors. Plagiarism check promotes originality in student's written works, and enhances their research skills. If the plagiarism check conducted by the AWC is positive, the paper will be returned to the concerned student with the appropriate feeBUSck and guidelines on proper citation styles. Multiple submissions are allowed.

(3) **Tutorials**

The AWC has a comprehensive section on writing tutorials and guidelines, which students, may access 24 hours a day, seven days a week. The links in the AWC Tutorials section provides thorough information and guidelines on basic grammar principles, getting started on writing an assignment, formatting styles, and guidelines for writing various essays, theses and dissertations.

Study Suggestions

Distance learning provides different learning experiences for students. Moreover, it poses many challenges: there are little or no face to face contacts with instructors; there might be lack of social communication with classmates except for some occasional chat room and discussion board conversations; and there is no much work on oral communication. Given these considerations, a student at Newport University CED can still succeed in learning and completing an online course given proper discipline, good study habits and efficient time management.

The following study suggestions will further help a student in completing each online course successfully and will also improve and increase his/her ability to learn:

(1) Learn to manage your time more efficiently. Create a study schedule by keeping a calendar. Take note of requirements to be submitted and the due dates. This way, you won't miss your deadlines.

(2) Participate in chat room discussions related to your online courses' topics. Since there's not much social interaction in distance learning, chat room discussions allow you to have a learning community at hand.

(3) Join some online collaborative projects dealing with matters related to what you are studying. This would provide environment for sharing viewpoints and knowledge while working with people who are also into distance learning like you.

(4) Find your study spot where it will be conducive for you to complete the work you need to get done. Organize your study spot and bring everything you need in it (e.g. laptop/computer, notes etc.).

(5) In reviewing materials, make use of some study techniques and methods such as mnemonics and making associations. These techniques are beneficial especially when memorizing.

(6) Realize your personal style of studying. Know which technique or method makes it easier for you to study a particular lesson.

American Disabilities Act of 1990

Newport University CED is committed to providing an education that does not discriminate and promotes ethical use of the computer technology. We strictly implement the requirements of the American Disabilities Act of 1990, which has a direct impact on the usage of media, technologies, and materials for online learning courses, especially with respect to our hard-of-hearing and deaf students. All online course media and materials with an audio component are either transcribed or captioned before we assign them (usually before the classes start) to provide practical accommodation for hard-of-hearing and deaf students. Since instructors may not know whether they have a hard-of-hearing or deaf students enrolled in their class until the end of the Drop/Add period, they are required to choose and develop accessible materials when they design their courses. Reasonable accommodations for students with hearing disabilities currently do not exist when instructors use synchronous audio communication technologies within a course. For example, we do not use online learning telephone conferencing systems when students with hearing disabilities are registered in a course, even when the participation of the student is not needed.

Affirmative Action Policy

Newport University CED recognizes the need for Affirmative Action and pledges its commitment to take on positive actions to address the effects of past practices or barriers to equal education opportunity and also to achieve the fair and full participation of people with disabilities, women, minorities, and older persons. The University also further states that it will conform to the anti-discrimination provisions of the Federal regulations and laws. We recognize the education difficulties experienced by minorities, people with disabilities and by many older persons and, where appropriate, we have set program goals to overcome the present effects of past discrimination, if any, to achieve the full and fair teaching and learning of such persons. In order to implement affirmative action policies, our staff has prepared an Affirmative Action Plan that includes programs aimed at eliminating discrimination and promoting fairness. The Affirmative Action Plan incorporates specific objectives, goals, actions, timetables, as well as a complaint procedure.

Sexual Harassment & Gender Discrimination of 1974

According to the U.S. Equal Employment Opportunity Commission, “Sexual harassment is a form of sex discrimination that violates Title VII of the Civil Rights Act of 1964. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitutes sexual harassment when submission to or rejection of this conduct explicitly or implicitly affects an individual's employment, unreasonably interferes with an individual's work performance or creates an intimidating, hostile or offensive work environment”. Newport University CED has zero tolerance on sexual harassment from any staff, faculty members, and or students. Appropriate law enforcement agencies must be notified in the event the University believes that sexual harassment has occurred.

Ethical Computer Use

Newport University CED upholds ethical computer use. Everyone within the community who uses the University communications and computing facilities is responsible to use them in a professional, legal, and ethical manner. This means that every user agrees to the following conditions: Users must respect the integrity of the systems and must recognize that some data are confidential. They must also respect the rules and regulations that govern the use of equipment

and facilities and they must not obtain unauthorized access to the accounts and files of others. Users must also respect the intended use of all accounts and they must follow the guidelines for and familiarize themselves with appropriate usage for the systems they access.

Copyright Policy and Procedures

Newport University CED has a strict policy regarding copyrights and patents. Any student who makes a research project which involves significant use of facilities, equipment, funds, or materials of the University, or one that is subject to terms and conditions of a sponsored project or other contract between the University and another party shall assign this project as well as all its patents and applications to the University, unless the project has been released to the researcher in accordance with the patent policy provisions. When a student completes a research project that does not involve significant use of facilities, equipment, funds, or materials of this University, and one that is not under the terms of a sponsored research project or other contract between the University and another party, the University will waive its rights and the research project will be the exclusive property of the student, provided that his or her rights in the project are not changed by the terms of financial aid received, such as scholarships, external sponsorship, traineeships, fellowships, or any other financial aid, whether or not the project is administered by the University. The Provost or his designee is the one responsible for administering intellectual property matters that are related to patents, inventions, trademarks, publications, and copyrights. The Provost shall represent the University in any matter regarding intellectual property that may substantially affect the institution's relationships with the public, government, and industry. It is the responsibility of the Patent Committee to advise and make recommendations to the Provost relating to intellectual property matters that arise from the activities of the students, conducting research, the determination of rights between the researchers and the University, as well as the disposition of patent rights that the institution does not wish to exercise.

Student Code of Conduct

Section I: Scope

This policy applies to all students at Newport University CED.

Section II: Guiding Principles

The University, in all of its programs, is committed in:

(1) Providing a learning experience that meets the needs of the students by provision of some technical assistance as well as library and information services online.

(2) Recognizing the importance of critical thinking, exchange of ideas and open inquiry; thus different venues for online students' interaction are provided.

(3) Continuous pursuit of high academic standards and quality education.

Section III: Academic and Ethical Conduct

All students enrolled in the program are expected to observe and conform to the University's requirements concerning academic matters and ethics and behavior in dealing with online instructors as well as personal conducts with other students in chat room discussions. Given these considerations, a student:

(1) Should observe respect and proper behavior towards his/her online instructor during lectures and fellow students during chat room and online board discussions;

(2) Use all resources and materials which will be provided by the University for academic purposes only. Any use of these resources and materials for any other purposes without the permission of the University shall be punishable by disqualification from a program.

(3) Observe scholastic honesty in all academic submissions. Plagiarism is strictly prohibited and could merit disqualification from the program of a student.

Section IV: Implementation

The above policies shall be implemented and distributed/sent to all students of Newport University CED.

SCHOOL of BUSINESS

DEAN:
Mohammad Alam Tareque, psc (Retd.)
MBA (HRM),
MDS, MA (Eng.), MCP

For students interested in business administration, the University has a School of Business that offers diploma, undergraduate and Master's programs in these fields. The University also offers Doctor of Business Administration (BUS). The primary purpose of establishing the School of Business is to develop the students as professionals either in the private sector or in public practice and as potential executives. The School of Business was also established to develop potential managers with a unique advantage in their profession, be it in financial, industrial, nonprofit, or government institutions. The courses seek high-caliber candidates, that is, students with the discipline and interest to develop their leadership and managerial potentials. To achieve its goal, the School of Business has a broad-based curriculum that balances technical training and practical problem solving.

Diploma in Aviation Management

Our diploma programs are the first choice of working adults and mature students across the globe for its Ease & Flexibility, Affordability, Quickness and Quality of Education.

This program provides a broad background in accounting, finance, human resource management, information technology, marketing, economics, statistics, management, law, and policy.

The aviation industry is growing at a fast pace, and is forecasted to set double digit growth rate for the next five years. The airports, airlines and air cargo sectors are booming in line with the economic growth of the around the world. Aviation workers with the required qualification and skills would have much opportunity to wok in aviation companies such as Airlines, Cargos, Airports and many more. These organization will need thousands of graduates a year to fill their vacancies.

INDUSTRIAL ON-THE JOB TRAINGING

Every student will have to go through Industrial On-the-Job Training for 12 weeks. The training will have to be managed by students themselves at any commercial airlines and student is expected to get the subject of his choice approved by the university or by an experienced professional nominated for the purpose by the university or by the specific ASC of the university.

GENERAL EDUCATION COURSES (30 Credits)

GE 001English (6)
GE 018 Principles of Management (6)
GE 020 Economics (3)
GE 025 Accounting (3)
GE 030 Finance (3)
GE 035 Marketing (3)
GE 040 Business Law (3)
GE 020 Basic Computer Knowledge and Applications (3)

AVIATION MANAGEMENT COURSES (40 Credits)

AVM 130 Aviation History (3)
AVM 145 Safety and Ethics in Aviation (1)
AVM 233 Air Transportation (3)
AVM 322 Aviation Human Capital & Employee Management (3)
AVM 333 Aviation Security & Crisis Management (3)
AVM 337 Airport Management (3)
AVM 341 Aviation Law (3)
AVM 346 Airline Management (3)
AVM 347 Aviation Logistics (3)
AVM 349 Aviation Safety Management (3)
AVM 434 Human Factors (3)
AVM 444 Air Transport Economics & Finance (3)
AVM 445 International Airline Management and Operation (3)
AVM 447 Crew Resource Management and Advanced Systems (3)

Total Credits required for Diploma in Aviation Management is 70 Credits.

Bachelor of Business Administration

The Bachelor of Business Administration undergraduate program is proud to offer various opportunities to students who are aspiring to obtain intellectual ability in business policies andprinciples through an integration of its core subjects on organizational management, economics, finance, business law and ethics, among the few. With today's progressive globalization, the program, being a general management course and multidisciplinary in nature, opens doors to a vast array of career options in the various fields of business, such that graduates are expected to get an edge in holding professional managerial and entrepreneurial positions in respected business firms. The program seeks to develop business professionals with sufficient training in organizational management and with specialized knowledge and skill in a functional area of business activity. As such, the program seeks to instill social responsibility to students, without compromising personal satisfaction through the potentials of getting into high-earning yet challenging jobs in the industry.

General Education Courses (60 Credits)

Core Courses (42 Credits)

BUS 401: Introduction to Business (3)
BUS 403: Principles of Accounting (3)
BUS 407: Macroeconomics (3)
BUS 410: Organization & Management Theory (3)
BUS 411: Principles of Marketing (3)
BUS 416: Consumer Behavior (3)
BUS 418: Principles of Management (3)
BUS 404: Business Law (3)
BUS 406: Microeconomics (3)
BUS 408: Business Finance (3)
BUS 409: Behavioral Science for Business (3)
BUS 412: Research & Quantitative Methods (3)
BUS 413: Ethics & Social Issues in Business (3)
BUS 414: Organization Development (3)

Business Concentration Courses: (18 Credits)

Total Credits required for Bachelor of Business of Administration (BBA) is 120 Credits.

B.Sc in Information Technology

The program emphasizes the practical applications of information technology. It provides students with both breadth and depth of information technology needed for professional success in this field. The university offer this program either Distance or Directed Independent Study and regular mode through the Approved Support Centers and Internet (online). The curriculum of the Bachelor of Science in Information Technology with a Business Administration concentration requires the successful completion of 120 credits.

Course Requirements

General Education Courses (60 Credits)

Core Courses (42 Credits)

COS-116 C Programming (3)
COS-191 Visual BASIC (3)
COS-191 Visual BASIC (3)
COS-213 C++ Programming (3)
COS-231 Assembly Language (3)
COS-241 Data Structures (3)
COS-283 UNIX (3)
COS-330 Computer Architecture (3)
COS-352 Operating Systems (3)
COS-451 Artificial Intelligence (3)
CIS-311 Database Management (3)
CIS-351 Software Engineering (3)
CIS-301 Management Information Systems (3)
MAN-435 Project Management (3)

Business Concentration Courses: (18 Credits)

Total Credits required for B.Sc. in Intormation Technology is 120 Credits.

Master of Business Administration

The program provides graduate students with advanced knowledge on business and related fields that will aid them to advance in their professional careers. With this, the program encompasses the fields of operation management, accountancy, human resources and marketing. The program increases the potential for graduates to acquire executive positions in world-class business institutions. The program aims to produce graduates with sought-after abilities and expertise in business administration. Aside from this, it seeks to enhance the students' leadership abilities as they deal with rigorous business situation in today's unstable economy. The program is directed toward producing more competent and adept experienced professionals with strengthened leadership and managerial skills.

Course Requirements

Core Courses (18 Credits)

BUS 504: Management Finance (3)
BUS 510: Marketing Management (3)
BUS 514: Human Resources Management (3)
BUS 522: Business Strategy & Policy (3)
BUS 698: Thesis I (3)
BUS 699: Thesis II (3)

Concentration Courses: (18 Credits)

Total Credits required for Master of Business of Administration (MBA) is 36 Credits.

M.Sc. in Information Technology

The applicant to the Master of Science in Information Technology degree program must have a bachelor's degree from an accredited institution; however, the degree need not be in business administration. Students who are graduates from other fields, especially mathematics, science and engineering, are encouraged to apply. Students are not required to take the GRE to be accepted into the program.

Course Requirements

Core and Major Education (8)

BUS 5000 Financial Accounting (3)
BUS 5002 Corporate Finance (3)
BUS 5013 Organizational Behavior (3)
BUS 5014 Information Systems (3)
BUS 5113 Project Management for Information Technology (3)
BUS 5114 Introduction to Information Security Management (3)
BUS 5115 Global Information Technology Management (3)
BUS 5154 Advanced Management of Information Systems (3)

Directed Electives (3)

MGT 5150 Management of Software Systems (3)
MGT 5151 Database Systems Management (3)
MGT 5152 Computer Systems Administration (3)

Total Credits required for M.Sc. in Intormation Technology is 33 Credits.

Doctor of Business Administration

The doctorate degree in Business Administration provides the highest education to those who aspire to be executive and entrepreneurs equipped with world-class skills and knowledge to conquer the competitive environment of business. As such, it provides only the most comprehensive training on various managerial theories and practices which encompass research methodologies and other related disciplines that are vital to advanced business decision-making. Given this training, it opens doors for businessmen to hold top executive positions in first-rate multinational companies. The program is grounded on its primary aim to further expand the students' appreciation of the both national and international management issues that will help them improve the global society. Consistent with this objective is the aim to inculcate outstanding competence, based on theory and practice, on dealing with administrative conflicts associated with several management issues. The program aims to produce business professionals who well equipped and active in the field of applied business research.

Course Requirements

BUS 835: Integrated eSystems and Global Information Systems
BUS 860: Law for the Entrepreneur and Manager
BUS 872: Global Climate Change: Economics, Science, and Policy
BUS 885: Competitive Decision-Making and Negotiation
BUS 893: Global Strategy and Organization
BUS 800: Advanced Managerial Communication
BUS 810: Managerial Psychology
BUS 906: Organizational Processes
BUS 911: Building and Leading Effective Teams
BUS 917: Managing Transformations in Work, Organizations, and Society
BUS 925: Financial Management
BUS 938: Doctoral Seminar in Research Methods

Comprehensive Examination (1 Credit)

Students intending to pursue doctoral degrees must take and pass a comprehensive examination after they have completed their non-dissertation courses, because it is a pre-requisite of the dissertation courses. One of the purposes of this examination is to sufficiently assess students'full knowledge on the dissertation title they wish to research.

Dissertation Courses (14 Credits)

The following courses in dissertation are all required for graduation from Doctor of Business of Administration Program. Dissertation must be taken when all the non-dissertation courses are completed. No more than one dissertation course should be taken per session.

BUS 960a Dissertation - Practical Research I (Proposal)
BUS 960b Dissertation - Practical Research II (Review of Related Literature & Methodology)
BUS 960c Dissertation - Practical Research III (Data Collection & Analysis)
BUS 960d Dissertation - Practical Research IV (Dissertation complete and Oral Defense)

Each non-dissertation and dissertation course is valued as 4 credits with the exception of dissertation complete and oral defense which is valued as 2 credits; comprehensive examination is valued as 1 credit. Total Credits required for Doctor of Business Administration is 63.

Doctor of Pholosophy in Business

The need has never been greater for business leaders who can contribute to the knowledge base of contemporary business. Doctor of Philosophy in Business learners gain the skills to meet that need through rigorous reflection on their professional experiences, in-depth exposure to the insights offered by the world's leading organizations, review of classic and cutting edge theory and research, and mastery of methods and techniques to identify, assess, understand and communicate strategically critical knowledge. As stew-ards of the discipline of Business, PhD students focus upon the creation of new knowledge in Business.

Instruction can be completed through on-line instruction and/or distance learning methodologies.

Course Requirements

The degree of doctor of philosophy is conferred primarily in recognition of creative accomplishment and the ability to investigate business problems independently, rather than for completion of a definite curriculum. The program consists of advanced studies and research leading to a significant contribution to the knowledge of a particular problem. A student's research may have analytical or computational or some combination of these. Each student is expected to complete an approved program of study beyond that required for a master's degree and present a dissertation proposal, complete a program of significant original research, and prepare and defend a dissertation detailing the research.

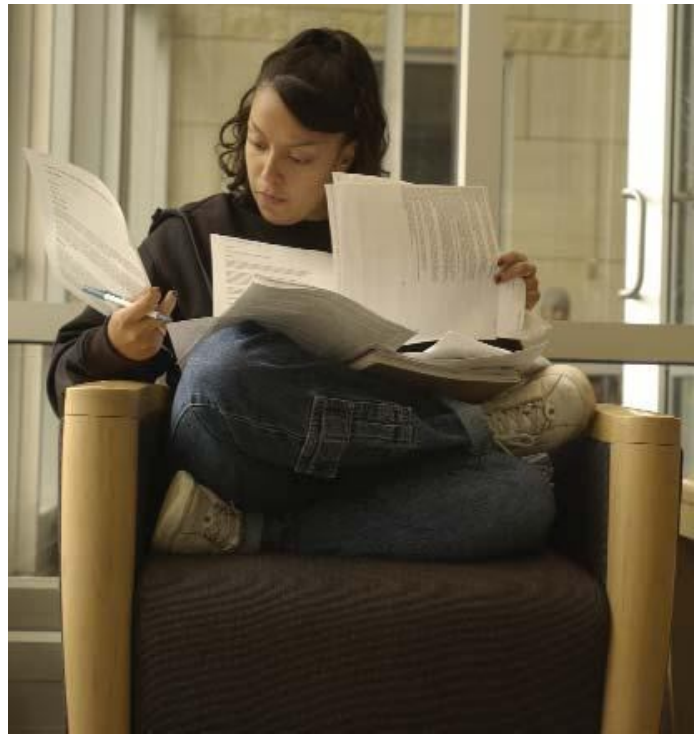
The program consists of a minimum of 43 credit hours of study beyond the master's degree. Of the minimum 43 credit hour requirement, at least 24 shall be for dissertation registration.

The doctoral program of study must be approved by the student's advisory committee and the department head. Considerable latitude is allowable in course selection, although appropriate advanced courses are expected to form a part of the student's program.
The purpose of the comprehensive examination is to cover the student's area of specialization and areas important to the major field. The examination is given when, in the judgment of the student, the student has had sufficient preparation in his/her field of study by completing significant coursework in the major area, two related areas of specialization and business studies, and by initiating doctoral research.

Students intending to pursue doctoral degrees must take and pass a comprehensive examination after they have completed their non-dissertation courses, because it is a pre-requisite of the dissertation courses. One of the purposes of this examination is to sufficiently assess students'full knowledge on the dissertation title they wish to research.

Coursework and Dissertation Summary
Major Area of Specialization, two related Areas of Specialization and business studies (18)
Dissertation (24)
Comprehensive Examination (1)

TOTAL CREDITS REQUIRED 43



BUS 401 -- INTRODUCTION TO BUSINESS (3)
A course designed to introduce the student to the composition and functioning of the business world. The student is made aware of the actions and effects of elements such as markets, labor, the legal environment, management and financial institutions in the American economy.

BUS 402: PERSONNEL MANAGEMENT (3)
An introduction to principles and techniques of personnel management. Covers the recruitment, training, promotion, and compensation of employees in conformance with laws, union contracts and economic structures. Emphasis is on the effective use of personnel to achieve the goals of the firm.

BUS 403: PRINCIPLES OF ACCOUNTING (3)
An introduction to basic accounting concepts and practices. Explores the basic processes of financial recordkeeping leading to the preparation of basic financial documents and their use as tools of managerial control and analysis.

BUS 404: BUSINESS LAW (3)
Study of the legal environment as it affects the business firm. Attention to major aspects such as contracts, agency, bankruptcy, negotiable instruments, antitrust and labor relations. Review of the historical development of legal concepts and case studies of topical items.

BUS 405 -- COMPUTER METHODS IN BUSINESS (3)
Introduction to computers, their application to business activities and use as a managerial tool. Instruction in BASIC programming as used for business purposes such as flow-charting, program testing and debugging.

BUS 406: MICROECONOMICS (3)
Introduction to basic economic concepts and tools. The role and effects of economic forces on such areas as price determination, resource allocation, income distribution and social political legal institutions.

BUS 407: MACROECONOMICS (3)
A study of the application of general economic principles in a free enterprise economy. Explores the inter-relationships between major components such as central banking, national income and public policies on the functioning of the American economy.

BUS 408: BUSINESS FINANCE (3)
A course designed to make students aware of the more important financial concepts and tools. An introduction to standard methods of financial analysis and factors in the economic environment affecting the finance function.

BUS 409: BEHAVIORAL SCIENCE FOR BUSINESS (3) The study of human behavior in business organizations. An introduction to the basic concepts of psychology and their effects on motivation and performance of employees. Applications of research findings to solving employee's psychological problems and improving their performance.

BUS 410: ORGANIZATION AND MANAGEMENT THEORY (3)
The application of organization theory and principles to business. Analysis of relationships between functional areas of the firm and control by top management to achieve goals of the enterprise.

BUS 411 -- PRINCIPLES OF MARKETING (3)
A review and analysis of marketing as the distributive agent of goods and services in an enterprise economy. Focus is on basic marketing concepts, principles and techniques. Role and activities of participants such as retailers, wholesalers, agents and brokers.

BUS 412 -- RESEARCH AND QUANTITATIVE METHODS (3)
Study of the principles of arithmetic and algebra of number systems. Application of these principles to business situations to provide a quantitative basis for decision making in areas such as sampling, estimation, depreciation and forecasting.

BUS 413 -- ETHICS AND SOCIAL ISSUES IN BUSINESS (3)
Analysis and comparison of major ethical systems now being followed by majorities of national populations. Analysis of general ethical tenets prevailing in the United States, and their effects on the economic, political, legal and social environments of the business firm.

BUS 414 -- ORGANIZATION DEVELOPMENT (3)
The study and application of formal, systematic means for achieving organizational renewal and growth. Includes goal formulation, strategy formulation and evaluation and the design of appropriate organizational structures and programs. Integration of various disciplines to define and achieve goals of the firm on an ongoing basis.

BUS 416 – CONSUMER BEHAVIOR (3)
A study of the social, psychological, economic and legal factors influencing the consumer decision-making process. Analysis of consumer behaviors' impacts and implications for economic activity, government policies, and social interactions. Role of the consumer as the dynamic factor influencing the roles of human and other resources.

BUS 418 – PRINCIPLES OF MANAGEMENT…(3)
A survey course designed to introduce the student to the principles and practices of the management function in modern organizations. Emphasis on the role and activities of the manager as a decision-maker providing guidance and direction to the organization in the process of producing goods and services. Analysis of the unique problems faced by managers in reconciling goals of various constituencies in the public and private sectors.

BUS 499 -- SENIOR PAPER OR PROJECT (6)
An original research on a subject of the student's choosing (with the approval of the Faculty Advisor). May be job related. The Senior Paper or Project must contain an adequate bibliography to cover the subject area and is expected to maintain the highest quality academic standards.

BUS 504 -- MANAGEMENT FINANCE (3)
Analysis of concepts dealing with business finance with particular emphasis on corporations. Study of capital budgeting, credit policies, capital structures, financial forecasting and dividend policies; current theories and legal aspects of business financial activities.

BUS 510 -- MARKETING MANAGEMENT (3)
A comprehensive orientation to the theoretical scope of marketing management. Includes extensive consideration of practical applications of marketing concepts to current problems facing the producer, wholesaler and retailer. Attention also is directed to the unique problems faced by American firms selling in foreign markets.

BUS 514 -- HUMAN RESOURCES MANAGEMENT (3)
A study of the effective use of human resources, in combination with capital and natural resources, to achieve the goals of the firm. Issues concerning the recruitment, development and retention of employees. Reconciliation of the needs of the firm and employee. Management of the personnel function in light of legal, economic, technological and social changes.

BUS 522 -- BUSINESS STRATEGY AND POLICY (3)
An integrative capstone course for the MBA program. Students participate, singly or in teams, in the solution of typical problems facing the business firm. Emphasis is on multi-discipline analysis and synthesis to develop optimal solutions.

BUS 598 -- THESIS I (3)
For the qualified graduate student working toward the Master of Business Administration. This course involves the completion of the Proposal, Chapter One and the Working Bibliography. Prerequisites: Student must have successfully completed all course-work.

BUS 599 -- THESIS II (3)
Phase II requires that an approval of the thesis proposal by the Graduate Review Committee, the candidate submit the thesis, one chapter at a time, to the Thesis Committee Chairman; suggestions for modification will be given to the candidate. This phase of the thesis preparation will be completed once all chapters have been approved by the Committee Chairman and submitted in final form to the Graduate Review Committee. Prerequisites: BUS-598

BUS 601 -- ADVANCED PERSONNEL MANAGEMENT (3)
Analysis of the human factors affecting the functioning of business organizations as a means of increasing management's ability to optimize utilization of each individual. Study of specific personnel areas such as motivation, job enrichment, performance appraisal and employee development programs.

BUS 604 -- INSTITUTIONAL PLANNING (3)
An integrative course designed to give the student experience in developing policy statements, designing procedures to implement policy and determining appropriate control techniques. Develops in the manager recognition that he must consider the total firm and its total environment in order to make sound and rational decisions.

BUS 610 -- INSTITUTIONAL FINANCE (3)
Application of principles of finance to the financial management of the firm. Attention to the techniques of capital acquisition, utilization and distribution by the firm. Cost of capital as a basis for decision making. Capital planning and forecasting. Unique problems facing the international firm. The relationship of the firm to public and private capital markets.

BUS 612 -- ECONOMICS AND PUBLIC POLICY (3)
Analysis of the role of government (federal, state and local) in the regulation and control of business. Emphasis on current economic, political and social issues and their impacts on the firm. Role and effects of fiscal and monetary policies on economic growth and structure.

BUS 616 -- ADVANCED QUANTITATIVE METHODS (3)
Examination of important quantitative approaches to management decision making. Application of various analytical methods, models and theories to a variety of management decision areas. Use of tools such as decision theory, simulation, PERT/CPM and linear programming to minimize risk and uncertainty in management activities.Analysis of the basic requirements for effective management control over the various operational activities of the firm. Treatment of the firm as a unified complex and interwoven set of subsystems each of which effects the operation and control of the others. Role of management in coordinating and directing activities to optimize organizational behavior.

BUS 618: BUSINESS PLANNING (3)
Applications of forecasting theories and methods in the formulation and implementation of business planning. Utilization of econometrics, systems analysis and statistical tools to develop sound plans to serve as guides to business decision making.

BUS 619 -- RATIONAL MANAGEMENT (3)
Application of mathematical and statistical techniques to quantify factors affecting management decision making. Use of computers to handle numerical data, increase objectivity and minimize bias in decisions.

BUS 620 -- MANAGERIAL ACCOUNTING (3)
Development and use of accounting information in management decision making. Use of accounting tools and techniques such as standard and flexible cost systems, cost reports, distribution cost control and responsibility accounting as bases for management decisions.

BUS 621 -- MANAGEMENT PRACTICE AND ORGANIZATIONAL BEHAVIOR (3)
Analysis of the basic requirements for effective management control over the various operational activities of the firm. Treatment of the firm as a unified complex and interwoven set of subsystems each of which effects the operation and control of the others. Role of management in coordinating and directing activities to optimize organizational behavior.

BUS 622 -- ADVANCED MANAGERIAL ECONOMICS (3)
Application of microeconomics tools to business decision making, analysis of demand, cost, production and pricing. Optimal resource allocation market structures, behavior and performance.

BUS 623 -- INDUSTRY ECONOMIC ANALYSIS (3)
Economic analysis of a firm and its operations. Measurement of producer performance as a function of the state of technology and economic efficiency. Achieving improvements in performance via technology and efficiency avenues.

BUS 624 -- ORGANIZATION DESIGN (3)
Organization structure and the technology/ personnel /environment interface. Use of open system concepts, the design process structural factors and contingency approaches. Planning for intervention and change.

BUS 625 -- LEADERSHIP BEHAVIOR AND MOTIVATION (3)
Current theories, research findings and issues pertaining to leadership and motivation. Emphasis on application of theories for developing effective motivational climates and self-assessment exercises.

BUS 626 -- CORPORATE PLANNING AND ENVIRONMENT (3)
Concepts, practices and methods in planning and environmental analysis. Use of case studies and industry comparative analysis to identify areas of strengths and weaknesses.

BUS 627 -- MULTINATIONAL MARKETING (3)
Study of international marketing policies and strategies. Multinational Marketing channels, promotional media, and communication problems. Problems of pricing and differing national laws and regulations.

BUS 628 -- INDUSTRIAL MANAGEMENT (3)
A study of basic principles and techniques in industrial management. Analyzes problems such as forecasting, financing, production planning, operations, quality control and inventory management.

BUS 629 -- MANAGEMENT PRACTICE FOR THE INTERNATIONAL INSTITUTION (3)
Challenges and problems facing the American firm operating in an international economy. Analysis and comparison of differing economic, cultural, political and social structures effecting the activities of producers, financial institutions, sellers and inter-government relations.

TQM 630 -- PHILOSOPHIES AND CONCEPTS OF TOTAL QUALITY MANAGEMENT AND LEAN MANUFACTURING (3)
This course provides the student with a comprehensive and integrated overview and understanding of the philosophies, tools, and practices which comprise Total Quality Management.

TQM 631 -- PROBLEM SOLVING AND STATISTICAL PROCESS CONTROL (3)
This course provides the student with a detailed and applied understanding of team-oriented problem solving, the seven quality control tools and statistical process control charting techniques.

TQM 632 -- METHODOLOGIES OF DEFECT PREVENTION, CYCLE TIME REDUCTION AND WORK STANDARDIZATION (3)
This course provides the student with a detailed and applied understanding of world-class defect prevention and cycle time reduction methodologies including poka-yoke, single minute exchange of die, and just-in-time.

TQM 633 -- APPLIED DYNAMICS OF TEAMS, EMPLOYEE EMPOWERMENT AND CULTURE CHANGE (3)
This course provides the student with an understanding of the interpersonal and group dynamics of teamwork and involvement within an organization. This course also teaches students the basic skills of effective team leadership and conflict resolution.

TQM 634 -- TQM PROJECT (3)
This activity requires the student to demonstrate an integrated understanding of and facility with the tools and philosophies of Total Quality Management by conducting, documenting and analyzing a TQM intervention in an applied environment.

BUS 645 -- CONTEMPORARY MARKETING MANAGEMENT (3)
Diagnosis and solution of marketing problems facing the American marketing executive. Development of marketing policies and strategies to meet the needs of the firm and conform to legal, social and political constraints. Special problems relative to international marketing.

BUS 651 -- INTRODUCTION TO INTERNATIONAL BUSINESS (3)
A Course designed to introduce the student to the composition and function of International Business essentials, including the nature of the environment of working in an international setting. The impact of multinational organizations upon international business is explored.

BUS 652 -- INTERNATIONAL MARKETING (3)
A comprehensive approach to the theoretical scope of International Marketing, including extensive consideration of global issues that challenge today's international marketers. The student will explore concepts relevant to international marketers. The student will review the approaches and framework involved in the identification of cultural and environmental uniqueness of nations or global regions and learn to analyze the impact of these issues on business on an international scale.

BUS 653 -- MULTINATIONAL BUSINESS FINANCE (3)
Analysis of concepts dealing with Multinational Finance with particular emphasis on the importance of global integration of money and capital markets, flow of capital internationally, lowering risks through international portfolio diversification, lowering cost of capital and securing equity internationally.

BUS 654 -- INTERNATIONAL MACROECONOMICS ANALYSIS (3)
This course explores the application of macroeconomics tools to the decision making process in the world economy.

BUS 680 -- LEGAL ISSUES FOR THE MODERN INSTITUTION (3)
Analysis of the legal processes, trends and implications of laws, regulations and recent court decisions effecting business and management. Survey and comparative analysis of the legal systems of major nations participating in international trade, finance and commerce.

BUS 688 -- ADMINISTRATIVE POLICY AND ADMINISTRATION (3)
Analysis of management theories and philosophies. Evolution and development of management theory and practice in the United States economy. In depth studies of cases involving administrative problems and policies. Structuring of policies to meet the firm's goals and to conform to legal, political, social and economic constraints.

BUS 696 -- PROJECT (3)
The student will propose and investigate a subject area of his/her choosing (with the approval of the Faculty Advisor). The presentation of the project study must fit within the general description of the degree objectives and is expected to be of the highest academic quality.

BUS 800 Advanced Managerial Communication (4)
This course introduces interactive interpersonal and oral communication skills that are important to managers. These include listening, running meetings, presenting to a hostile audience, and group decision-making.

BUS 810 Managerial Psychology (4)
This course offers students the opportunity to gain insight at the science of how individuals and groups of people behave at work. It gives students with a theoretical knowledge and skills used in organizational psychology. Students will learn about training, organizational development, health and safety, employee relations, and human-machine interaction.

BUS 906 Organizational Processes (4)
This course uses writing assignments, readings, and lectures to teach students how to be action-takers in complicated organizational settings. BUS students may gain the management and analytical tools needed to guide businesses. Key topics covered include ethical violations and the theory and practice of hiring.

BUS 911 Building and Leading Effective Teams (4)
This course is an introduction to leadership, teams, and learning communities. Students will use various experiential exercises to develop individual and team skills and to build supportive relationships. Students will discuss the idea of the images, experiences, and thoughts that are internal to every leader.

BUS 917 Managing Transformations in Work, Organizations, and Society (4)
Topics cover the integrating family and work, evolving social contract at work, and managing diversity and strategic labor-management partnerships. Topics also cover managing relationship between the firm and its stakeholders. BUS 917 focuses on skills required to adapt to sweeping changes in the workplace and the workforce.

BUS 925 Financial Management (4)
The course focuses on corporate finance and capital markets. It emphasizes the financial facets of managerial decisions and delves into all areas of finance, such as the valuation of financial and real assets, financial derivatives and risk management, and dividend policy and corporate financing.

BUS 860 Law for the Entrepreneur andManager (4)
In this course, we will examine how the current legal environment, government regulation, and e commerce environment impact today's business decisions. The cases in the text are cutting-edge, exciting, and engaging, and the reasoning of each case is presented in the language of the court. Specifically, we will focus on presenting the legal environment and ethics in a way that will spur students to ask questions and go beyond basic memorization to develop a greater understanding of the applicability to their business life.

BUS 872 Global Climate Change: Economics, Science and Policy (4)
We are not just living through an age of change; we are living through a 'change of age': the most profound inflection point in human history since the Enlightenment. From terrorism and nuclear proliferation to emerging technologies and economic globalization, this course will weaves together 7 powerful 'dynamic tensions' that will reshape human life in the coming decades as laid out by the textbook author. The textbook will offer breakthrough insights into how these tensions will conflict and resonate, creating giant waves of change. To answer pivotal questions, we will draw on breakthrough 'scenario planning' techniques pioneered by our textbook author: techniques hundreds of top organizations now rely on.

BUS 885 Competitive Decision-Making and Negotiation (4)
This course will provide an innovative, skills-based approach to needs development, negotiating, and presentation that students can learn and use to achieve effective and focused application of personal strengths. It will enable them to understand the skills and processes necessary to meet both the logical and emotional requirements of people and organizations, while respecting operational time constraints.

BUS 835 Integrated eSystems and Global Information Systems (4)
This course provides an overview of computer applications in business organizations. Students expand their scope and domains of business practices using information systems. This course teaches students the use of data, information, and technology in a new way that will favor their organizations and shape the world business future.

BUS 893 Global Strategy and Organization (4)
Simply put, this course addresses the most challenging task faced by multinational companies—how to deal with globalization and the resulting need for globally integrated strategies. To answer this question, we will first look to understand global strategy. The remainder of our study will focus on diagnosing what the global market needs and how to foster growth in a competitive manner through competitive decision-making and strategy.

BUS 938 Doctoral Seminars in Research Methods (4)
This course lays the foundations of good research in the field of social sciences. It deals with the logic and assumptions underlying social research. Students will become exposed with various approaches to research design and methods. The course will help students to develop their own projects.

BUS 960a Dissertation- Practical Research I (Proposal) (4)
The course requires students to select research problem through execution of authentic research until the preparation of a completed report along with practical suggestions based on a solid theoretical frame work and sound pedagogy. Study goals and objectives as first part of dissertation are the main requirements of the course.

BUS 960b Dissertation- Practical Research II (Review of Related Literature & Methodology) (4)
The course is a follow up to Practical Research I. The student is asked to perform preliminary litera-

ture review. Practical Research II involves methods of literature selection where students employ different modes of literature scanning. Students must
also propose a research methodology.

BUS 5000 FINANCIAL ACCOUNTING (3)
Studies accounting concepts, the accounting model, measurement processes, financial statements, financial analysis, the accounting cycle, monetary and fixed assets, inventory, current and long-term liabilities, and equity structures of partnerships, proprietorships and corporations.

BUS 5002 CORPORATE FINANCE (3)
Covers concepts and tools of corporate financial management including corporate financial planning, forecasting, budgeting, quantitative techniques and practices. Considers the importance of ethics and the international aspects in financial decision-making. Prerequisites: BUS 5000.

BUS 5013 ORGANIZATIONAL BEHAVIOR (3)
Covers the contributions to management theory made by the behavioral sciences. Gives a better understanding of the human being and why he acts as he does. Studies individual and group behavior. Extensively uses current periodicals and case materials.

BUS 5014 INFORMATION SYSTEMS (3)
Studies information systems design associated with business organizations. Includes development life cycles, requirements analysis, systems design and performance considerations. Views information systems as strategic tools to provide competitive advantage.

BUS 5114 INTRODUCTION TO INFORMATION SECURITY MANAGEMENT (3)
Examines the fundamental principles of computer security as applied to information technology (IT). Covers foundations, psychology, prevention, detection, human factors, technical considerations, management processes and future considerations for the security of information technology.

BUS 5115 GLOBAL INFORMATION TECHNOLOGY MANAGEMENT (3)
Covers theory, development and impacts of national and international policy on information technology (IT). Explores how frequent shifts in public policy require IT businesses to adjust rapidly to adhere to regulations. Requires development of sophisticated strategies including new technologies, global transfer and analysis to be able to adapt to the changing environment.

BUS 5154 ADVANCED MANAGEMENT INFORMATION SYSTEMS (3)
Covers the relationship between information technology and the strategic operational and functional areas of organizations in both global and domestic environments. May serve as the capstone for certain majors. Prerequisites: BUS 5014.

BUS 5150 MANAGEMENT OF SOFTWARE SYSTEMS (3)
Explores management's consideration of functional requirement specifications, design, development, implementation and maintenance of computer-based software systems that provide information technology-related services to organizations. (Requirement: Prerequisite course or equivalent.) Prerequisites: BUS 5014.

BUS 5151 DATABASE SYSTEMS MANAGEMENT (3)
Investigates how database management system techniques are used to design, develop, implement and maintain modern database applications in organizations. (Requirement: Prerequisite course or equivalent.) Prerequisites: BUS 5014.

BUS 5152 COMPUTER SYSTEMS ADMINISTRATION (3)
Covers avchief information officer's multiple role in management of computer-based resources,vboth centralized and networked data center operations with wide-area networks andvlocal-area networks; computer-based systems development/ maintenance/security. (Requirement: Prerequisite course or equivalent.) Prerequisites: BUS 5014.

COS-101 Introduction to Computers (3)
Introduction to Computers provides students with a broad, general introduction to hardware and software fundamentals, productivity software, graphics, digital media, multimedia,database applications, networking, the Internet, and security and privacy issues as well as an introduction to object-orientedprogramming using the Visual Basicprogramming language. Windows XPoperating system; personal Internetaccess; an Internet browser like Netscape 8.1 or Internet Explorer 5.5 or higher, Microsoft Visual Basic 2010 (Express Edition recommended); and word processing software.

COS-116 C Programming (3)
Explains how to write, debug and run programs in C language. The course includes discussions of algorithms, data types, arithmetic, assignments, relation and repetition. Functions, arrays, pointers, character strings, structures and files are used. It is advisable to have completed an introduction to computer programming course or to have equivalent programming experience. Students must have regular access to a computer with C compiler software either on a Windows or MS-DOS computer or on a Macintosh with PC emulation or with SoftPC installed. A C compiler is not supplied by the College and must be acquired by the student prior to or at the start of the course. It is not possible to proceed through the course with-

out a C compiler. The compiler should be a full implementation of the ANSI standard for C. An ANSI C++ compiler may be used because C is a supported subset in a C++ compiler. Complete documentation is required to handle compiler variants and operational problems.

COS-191 Visual BASIC (3)
The student will be able to demonstrate knowledge of Visual BASIC programming language including the fundamentals of object-oriented, event-driven programming in a Windows environment. A variety of programs will be developed for business applications.

COS-213 C++ Programming (3)
This course explores C++ programming in the context of procedure and objectoriented software development. It covers writing, compiling and running programs in the C++ language. This course offers students a platform and direction to enhance their C++ knowledge, experience and skills.

COS-231 Assembly Language (3)
An introduction to the study of the basic structure and language of machines. Topics include basic concepts of Boolean algebra, number systems, language, addressing techniques, data representation, file organization, symbolic coding and assembly systems, use of macros, batch operation and job handling. U Advisory: It is advisable to have computer programming experience.

COS-241 Data Structures (3)
Involves an investigation of various data structures, including stacks, queues, lists and trees, and searching and sorting techniques. U Advisory: Students taking this course will need access to a computer and compiler software and will be required to do programming in C++. Experience in C++ programming is advisable.

COS-283 UNIX (3)
The student will be able demonstrate knowledge of the UNIX operating system including the history and development of UNIX/Linux, the key functions and advantages of the UNIX/Linux operating system, file and directory management, use of the vi editor, permissions, shell programming, and use of the X Windows GUI.

COS-330 Computer Architecture (3)
Covers the nature and limitations of computers. The CPU is covered in detail, including processor, control and memory design. Data path design and the ALU - both fixed and floating-point arithmetic - are covered. The course also includes pipeline and super scalar processing. Finally, the I/O system is studied in some detail. U Advisory: It is advisable to have completed two computer science courses.

COS-352 Operating Systems (3)
This course concentrates on the design and function of the operating systems of multiuser computers. Topics include time sharing methods of memory allocation and protection, files, CPU scheduling, input/output management, interrupt handling, process synchronization, deadlocking and recovery and design principles. U Advisory: Knowledge in a course equivalent to COS-241 Data Structures with a grade of C or better is required to succeed in this course. It is highly recommended that students have completed COS-330 Computer Architecture or equivalent or have experience with C or UNIX. Students are responsible for making sure that they have the necessary knowledge.

COS-451 Artificial Intelligence (3)
An introduction to how Artificial Intelligence (AI) methods solve problems that are difficult or impractical to solve with other methods. The focus of the course is on learning how to determine when an AI approach is appropriate for a given situation, being able to select AI method and implementing it. AI methods will be chosen from heuristic search and planning algorithms, formalisms for knowledge representation, and reasoning techniques and methods applicable to expert systems and games. U Advisory: Students should be familiar with computer hardware and software as provided in an introductory computer science course and they should have the sophistication of understanding material as demonstrated by successfully completing courses such as discrete math, discrete structures or computer architecture, or having similar practical experience. It is recommended, but not required, to have taken a course in computer programming. However, the course will not require programming.

CIS-311 Database Management (3)
Provides students with fundamental concepts of databases and Database Management Systems (DBMS). It offers terminology, conceptual approaches and practical approaches when designing and implementing different database types. Students will learn design considerations and solutions with a DBMS, using various industry standards and models available. Analytical and problem-solving skills will be strengthened. The material also includes common tools and techniques utilized to optimize performance and secure the database and related resources. Other topics covered include: Entity Relationship Diagrams (ERD), Structured Query Language (SQL), Information and Decision-Making and Data Normalization.

CIS-351 Software Engineering (3)
Immerses the student in the process of software engineering, which involves identifying the components of a software system, breaking complex components into smaller and more manageable abstract pieces, and modeling the entire system. These tasks help

software teams better handle the design, planning and development of soft-
ware systems. Students will be exposed to a variety of techniques used to plan and model software applications. They will also learn about strategies used to gather user input and develop software.

CIS-301 Management Information Systems (3)
Provides an overall picture of information systems in the conduct of business. Covers the organization and management of a networked enterprise, the infrastructure of information technology, the necessary support systems for the digital company, and the building and managing of information systems in a global business environment.

MAN-435 Project Management (3)
Project Management provides the foundation and framework for managing projects to assure completion within budget, schedule and performance specifications. The course begins by introducing the role of project management and elements of effective project leadership. Within the modules, students are introduced to principles and tools for managing project scope, risk and cost. The course also introduces project evaluation and control methods, keys to future project success.

AVM 130-Aviation History (3)
Familiarization with the beginnings of aviation: the events, the aircraft, and the people that enabled the fledgling industry to develop into what it is today.

AVM 145-Safety and Ethics in Aviation (1)
Designed to acquaint the beginning aviation student with a set of policies, procedures, rules, and laws that affect the student's potential success in the aviation industry. A variety of topics will be presented to address safe, professional and ethical conduct necessary for success in the aviation industry. This course is designed for the student without an instrument rating and must be taken the first term of flight training.

AVM 233-Air Transportation (3)
The study of the air transportation industry from development to present day. A historical overview is studied and the course includes contemporary discussion of federal legislation, financial characteristics, classification of air carriers, organizational structure and function of the following organizations: Department of Transportation, Federal Aviation Administration, National Transportation Safety Board, and professional organizations representing the air transportation industry. Sectors of the industry — aerospace, general aviation, commercial airlines, and air cargo — will be studied providing a basic foundation of information on which future studies and career decisions can be based.

AVM 322-Aviation Human Capital & Employee Management (3)
An overview of managerial practices with respect to the management of the human resource function and employee management within the aviation industry. A discussion on contemporary labor relations issues and managing within a unionized environment will also be addressed. Other areas of inquiry include selection and retention, training management, compensation and workforce integration. Upon successful completion of this course, students will have an enhanced understanding of human capital issues as well as how to manage a workforce that has unionized employees within the aviation industry.
Prerequisite: AVM 233

AVM 333-Aviation Security & Crisis Management (3)
This course offers an introduction to contemporary aviation security issues through the study of incidents, ICAO and U.S. regulatory agency requirements, and an understanding of practical security measures at major aviation entities. Crisis management techniques, predicting and preventing future threats and lessons learned will also be addressed. Upon successful completion of this course, students will have an enhanced understanding of the security and crisis management of air transportation, which is becoming a major aspect of the aviation industry.
Prerequisites: AVM 233 or consent of the instructor.

AVM 337-Airport Management (3)
The major functions of airport management: organization, zoning, adequacy, financing, revenues and expenses, evaluation and safety. A study of the airport master plan; federal, state, and local agencies; and the socioeconomic effect on the community.
Prerequisite: AVM 233 or consent of the instructor

AVM 341-Aviation Law (3)
A study of laws, regulations, aviation activities, and the liability arising out of the operation and/or ownership of aircraft, airports, and repair stations. Basic principles of tort law and risk management as related to aviation operations/ organizations are covered.
Prerequisite: AVM 233 or consent of the instructor

AVM 344-Corporate Aviation (3)
This course will provide the framework for an in-depth study of Corporate Aviation Department Management and the functions it fulfills. A study of the regulations, types of on-demand air transportation, benefits of on-demand air travel, flight department management, maintenance management, safety and aircraft selection as it relates to corporate aviation and executive transportation will be conducted. The course will culminate with a look at the current and future issues facing Corporate

Aviation Managers.
Prerequisite: AVM 233 or consent of the instructor

AVM 346-Airline Management (3)
A study of scheduled air carrier and commuter organization and functions, to include passenger service, air cargo personnel management, labor relations, sales, finance, and public relations. Prerequisite: AVM 233 or consent of the instructor

AVM 347-Aviation Logistics (3)
Study of maintenance management and logistic management principles as well as problems associated with actual physical distribution.
Prerequisite: AVM 346

AVM 349-Aviation Safety Management (3)
An introduction to aviation safety and Safety Management Systems (SMS) through the study of aviation accidents. Designed to provide a basic understanding of the contemporary issues faced by the industry and risk mitigation strategies, including the implementation of an SMS program. Accident investigative techniques, reporting methods and lessons learned will also be addressed. Prerequisite AVM 131, Sophomore standing or consent of the instructor.

AVM 434-Human Factors (3)
The study of human interface with the airplane and the operational environment. Crew coordination and decision making will be explored through case studies. The objective of the course is to prepare flight students to respond appropriately in critical safety of flight situations.

AVM 444-Air Transport Economics & Finance (3)
This course will provide an in-depth study into the unique aspects of air transportation and airline economics and finance. A study of the principles of air transport and airline economics, supply and demand analysis, international economics, pricing policy and revenue management, airline financing, financial statements, air transport operating cost management, aircraft purchasing, leasing and financing, among others will be addressed. The course will culminate with a look at the current and future economic and finance issues facing the air transport industry. Upon successful completion of the course, students will have an enhanced understanding of the unique aspects of air transportation and airline economics and financing.
Prerequisites: AVM 233 or consent of the instructor.

AVM 445-International Airline Management and Operation (3)
Study of the origin, growth, and development of international air transportation.
The characteristics of international air carriers and their role in serving national and international needs are examined. Particular attention paid to the economics and competitive strategies of international airlines, profitability, regulatory evolution, airport congestion, and the conflicting interests of the many parties involved. Review of the functions of ICAO, IATA, and DOT. Prerequisite: AVM 346 or consent of the instructor.

AVM 447-Crew Resource Management and Advanced Systems (3)
Provides the student with advanced crew procedures to include flight above 25,000 feet, advanced navigation, advanced systems, and advanced weather avoidance systems training. Designed to prepare the commercial pilot for corporate or regional airline environments.
Prerequisite: AVM 332

AVM 2401 AVIATION FISCAL MANAGEMENT (3)
Introduces basic financial management principles in an aviation industry context. Topics include financial document analysis, forecasting, financing, asset management and mergers. Uses spreadsheet, presentation, word processing and Internet search software tools to prepare and analyze financial reports and solve financial problems. (CL)

AVM 3201 AVIATION PLANNING (3)
Introduces the student to the requirements, issues and processes involved in aviation planning. Includes indepth study of the sources of aviation data, forecasting methods, the airport master planning process and environmental issues and requirements.

AVM 3202 AIRPORT DESIGN (3)
Includes analysis and application of FAA standards for airport design. Emphasizes the airside components. Also includes airport capacity calculations; movement area geometry; pavement, runway, and taxiway design; approach and departure gradients, terminal building concepts and heliports.
Prerequisites: AVM 3201.

AVM 3302 MULTIMODAL TRANSPORTATION (3)
Surveys the development and operation of land, water and air transportation systems. Discusses principles of logistics, transportation economics and intermodal traffic management, emphasizing air traffic. Includes transportation management in both the private and public sectors.

AVM 3303 TRANSPORTATION LOGISTICS (3)
Studies transportation and logistics management as a discipline concerned with efficient materials flow through the global industrial and economic system. Emphasizes managerial aspects of air transportation and logistics systems and serves as specialized education for those who plan careers in transportation or logistics.

AVM 3501 SPECIAL TOPICS IN AVIATION MANAGEMENT (3)
Topics of special interest offered when student interest and staffing permit. Topics announced prior to registration. May be repeated for a maximum of six credits.

AVM 4201 AVIATION ADVANCED COMPUTER APPLICATIONS (3)
Teaches the application of specialized software packages used in the aviation industry. Includes land-use management, airport and airway simulations and geographical information systems. Prerequisites: AVM 3202.

AVM 4204 CAD FOR AIRPORT ENVIRONMENTS (3)
Teaches AutoCAD applications, its interfaces, concepts, terminology and specialized conflict analysis and airfield planning simulation software packages used in the aviation industry. Includes the three-dimensional airspace analysis and Simtra Pathplanner software programs.
Prerequisites: AVM 3202.

AVM 4301 AVIATION LABOR LAW AND EMPLOYMENT STANDARDS(3)
Studies government regulation of aviation employment standards andlabor-management practices in negotiating and administering collective bargaining agreements. Examines private and public sector labor relations with specific application of labor law to the varied aspects of the aviation industry.

AVM 4302 AVIATION LAW (3)
Overviews the fundamentals of aviation law. Emphasizes factors guiding operational decision making by aviation managers and professional pilots to minimize exposure to legal liability.

AVM 4303 GENERAL AVIATION OPERATIONS AND MANAGEMENT (3)
Presents operational and managerial aspects of general aviation. Emphasizes corporate aviation. Includes fixed base operations (FBO), flight training, corporate aviation, general aviation aircraft, business aircraft ownership and managementmethods, and regulations associated with general aviation operations. Prerequisites: AVM 2401 or BUS 3401.

AVM 4401 INTERNATIONAL AIR COMMERCE (3)
Studies the geographic, economic, social and political environment of international air commerce. Includes the trend to globalization, technology transfer, legal environments and the effect of geography on business and politics.

AVM 4501 AIR TRANSPORTATION MANAGEMENT (3)
Surveys the development of the air transportation system leading to the modern organization and functions of airlines and general aviation business. Studies the route structure, scheduling, pricing and fleet selection strategies in the solution of typical operational problems.

AVM 4502 AVIATION BUSINESS SIMULATION (3)
Applies business management concepts and techniques to the decision-making and problem-solving processes and situations in an aviation business. Uses operations research techniques, process analysis, forecasting, and computer and mathematical modeling as tools. Prerequisites: AVM 4501.

AVM 4600 AVIATION MANAGEMENT INTERNSHIP (5)
Covers management training within the aviation industry. Requires a minimum of a full academic term during the senior year. For credit, this internship must be followed by AVM 4603. May be repeated for a maximum of 10 credits.

AVM 4602 INDEPENDENT STUDY IN AVIATION MANAGEMENT(3)
Provides outstanding students an opportunity to pursue independent study on selected subjects to a depth not otherwise available in the curriculum. Requires preparation of a formal written paper and an oral examination. May be repeated for a maximum of six credits. (Requirement: 2.8 cumulative GPA, division director approval and senior standing.)

AVM 4603 AVIATION MANAGEMENT SEMINAR (1)
Students present formal oral and written reports on their management internship to students and faculty for comment and critique. Mandatory in the first semester after completion of AVM 4600. May be repeated for a maximum of two credits. AVM 4701

AIRPORT MANAGEMENT (3)
Studies modern airports, including their roles, functions and status in the national air transportation system; sponsorship and management alternatives; management of airport development, operations and business matters; and discussion of current and emerging public airport issues. (Requirement: Senior standing.) Prerequisites: AVM 3202.

AVM 5000 FUNDAMENTALS OF AVIATION PLANNING AND DESIGN(3)
Introduces issues, requirements and processes involved in aviation planning, design and software applications. Studies the sources of aviation data, forecasting methods, the airport master planning process and environmental issues and requirements. Does not meet graduate degree requirements. (Requirement: Division director approval.)

AVM 5101 LEGAL AND ETHICAL ISSUES IN AVIATION (3)
Uses current issues as vehicles for study of the legal and moral concepts that influence developments in both national and international air law. Addresses legal and ethical considerations directly confronting the aviation professional through case studies. Prerequisites: AVM 4302.

AVM 5102 AIRPORT DEVELOPMENT (3)
Addresses capital project development issues at airports, emphasizing project definition, funding, project administration and coordination, marketing and property management of airside and landside facilities.
Prerequisites: AVM 4701.

AVM 5103 AIRPORT OPERATIONS (3)
Addresses requirements, responsibilities and methods of major U.S. and international airports. Studies both FAA and ICAO standards regarding air- and landside operations, operational safety,
maintenance and construction, security and emergency preparedness. Requires a case study or research paper.
Prerequisites: AVM 4701.

AVM 5104 AVIATION ECONOMICS AND FISCAL MANAGEMENT(3)
Focuses on the fiscal management of airports (financial management,
operating and capital budgeting, business relationships, capital funding sources and mechanisms) and selected financial issues of airlines and others in the aviation industry. (Requirement: Instructor approval.)

AVM 5105 AVIATION PLANNING AND ANALYSIS TECHNIQUES (3)
Teaches use of special software to evaluate compliance of airports with FAA safety, efficiency and land-use compatibility guidelines. Includes noise compatibility, imaginary
surface design, airport and airway simulations and geographical information systems. Prerequisites: AVM 4201 or AVM 5000.

AVM 5199 ADVANCED AVIATION MANAGEMENT INTERNSHIP (3)
Provides advanced management of, or research in, aviation-related operations or enterprises with approved industrial or governmental organizations. Requires a detailed written professional analysis of the experience. (Requirement: Program chair approval.)

AVM 5501 CASE STUDIES AND SPECIAL TOPICS IN AVIATION MANAGEMENT (1-3)
Studies in depth a specific case or topic in aviation management. (Requirement: Program chair approval.)

AVM 5899 FINAL SEMESTER THESIS (0-2 credits). Variable registration for thesis completion after satisfaction of minimum registration requirements. (Requirements: Accepted petition to graduate and approval by Office of Graduate Programs.)

AVM 5998 ADVANCED AVIATION RESEARCH PROJECT (3)
A capstone course requiring individual research into an aviation-related topic, issue or problem appropriate to the student's area of concentration. Conducted under the supervision of a graduate faculty member and culminates in a formal written and oral report. (Requirement: Program chair approval.)

AVM 5999 THESIS (3-6 credits). Studies in depth a specific aviation issue. Requires an oral presentation to faculty prior to formal defense of thesis. (Requirement: Program chair approval.)

DEAN:
Md. Abdur Rouf
M.Sc in Physics (Electronics)
Diploma in Aircraft Maintenance Engg.

Diploma in Aircraft Maintenance Engineering

THE PROGRAM:

The Diploma in Aircraft Maintenance Engineering (DAME) in Newport University CED (NUCED) is aimed at leading students to be well prepared either as a Aircraft Engineering Technician or in a chosen field of a degree program. With a strong basic skills and foundation acquired in NUCED, students will be able to confidently utilize their skills in real situation. This course is structured to enable students to work theoretically and practically. Students will definitely find it interesting as the laboratories are well equipped to meet the needs of the students.

This programme is your passport to certifying aircraft worthiness as the diploma incorporates the **European Aviation Safety Agency* (EASA)** syllabus, preparing you for the **EASA Part 66 Category B1.1** examinations. You sit for the EASA examination at the same time whilst you pursue your diploma course at NUCED.

PROGRAM REQUIREMENTS:
72 units are required for diploma, including 30 units of study applicable to the General Education Requirement, including the prescribed number of units.

WORKSHOP TRAINING
Every student will have to go through 6 weeks Workshop training per module as following in familiarization with different laboratories as per the Syllabus. The training will have to be managed by students themselves at any of aero-institutions or by the specific ASC of the university, under supervision of qualified BE/BTech qualified engineer.

AME 115	Materials and Hardware
AME 120	Maintenance Practices

INDUSTRIAL ON-THE JOB TRAINGING
Every student will have to go through Industrial On-the-Job Training for 12 weeks. The training will have to be managed by students themselves at any commercial airlines and student is expected to get the subject of his choice approved by the university or by an experienced professional nominated for the purpose by the university or by the specific ASC of the university.

GENERAL EDUCATION COURSES (30 Credits)

GE 001 English, (6)
GE 005 Physics, (6)
GE 010 Mathematics, (6)
GE 015 Chemistry, (3)
GE 016 Intro to Engineering & Technology (3)
GE 017 Engineering Drawing (3)
GE 020 Basic Computer Knowledge and Applications (3)

AIRCRAFT MAINTENANCE ENGINEERING COURSES (42 Credits)

AME 100 Electrical Fundamentals (3)
AME 105 Electronicv Fundamentals (3)
AME 110 Digital Techniques Electronic Instrument Systems (3)
AME 115 Materials and Hardware (6)
AME 120 Maintenance Practices (6)
AME 125 Basic Aeronynamics (3)
AME 130 Human Factors (3)
AME 135 Aviation Legislation (3)
AME 140 Turbine Aeroplane and Aerodynamics, Structure and Systems (6)
AME 145 Gas Turbine Engine (3)
AME 150 Propeller (3)

Total Credits required for Diploma in Aircraft Maintenance Engineering is 72 Credits.

* The European Aviation Safety Agency is the centrepiece of the European Union's strategy for aviation safety, promoting the highest common standards of safety and environmental protection in civil aviation. Visit www.easa.eu.int for more information.

B.Sc. in Aeronautical Science (Flight)

The university offer this program either Distance or Directed Independent Study and regular mode through specific Approved Support Centers and Internet (online). The curriculum prepares the graduate for a professional pilot career in the global air commerce industry and government regulatory agencies. The graduate will achieve at least commercial pilot, instrument and multiengine ratings, and is provided a strong foundation in aeronautical science and technology, and the regulated international aviation industry. Students have to complete all total 120 US Credits in 4 Years.

Course Requirements

A) General Education (GE) Requirements comprises of 20 courses (60 credits).

B) Area of Study: Aeronautical Flight Technology total 48 credits as following-

a. Private Pilot 6 credits

b. Commercial Pilot 12 credits

c. Instrument Pilot 6 credits

d. Aeronautical Flight Technology Major Courses-

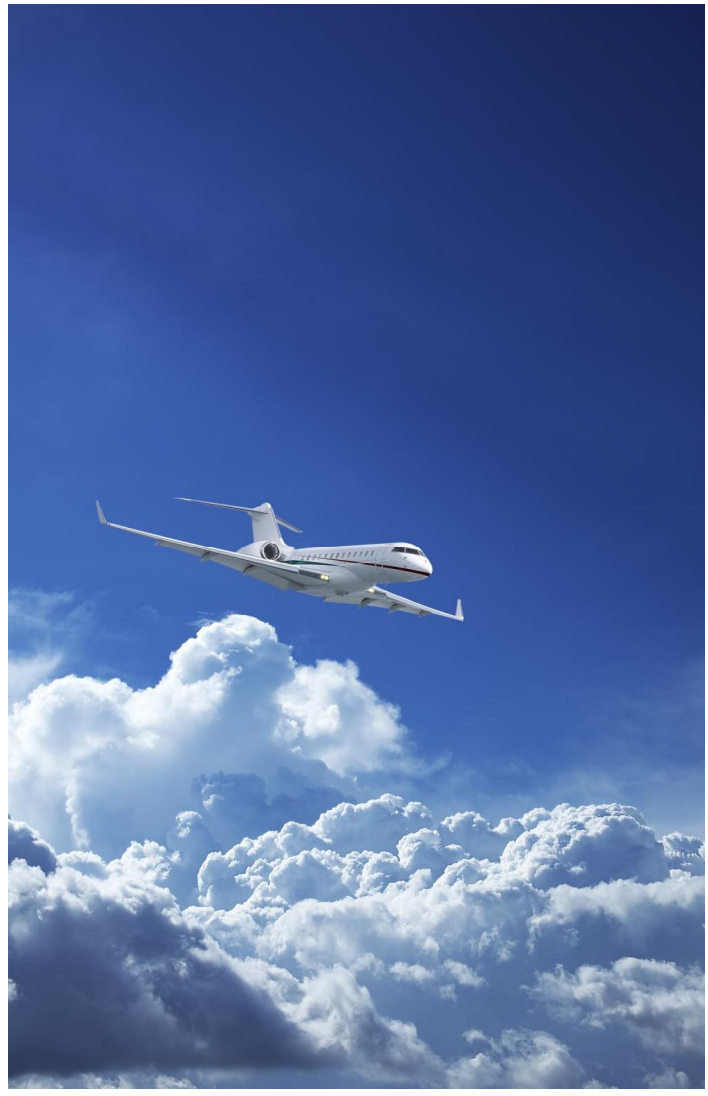
AFT 100 Introduction to Aviation and Aerospace (3)
AFT 102 Private Pilot Theory (3)
AFT 104 History of Aviation and Aerospace (3)
AFT 116 Aviation Safety (3)
AFT 202 Airline Operations (3)
AFT 205 Introduction to Airport Administration (3)
AFT 275 Aviation Meteorology (3)
AFT 315 Aviation Law (3)

C) Free Electives 12 credits

Flight Training: The Flight Training will be arranged by students under their own arrangement at all such facilities with a Flight Training School, however, it will be necessary for the student(s) to produce a certificate, signed by Flight Training School certifying that the training capsule has been gone through by the student or by the specific ASC of the university.

Laboratory Training: Every student will have to go through different laboratories as per the Syllabus. The training will have to be managed by students themselves at any of Flight Training School or by the specific ASC of the university, under supervision of qualified Flight Instructor or engineer.

Professional Training or Project Work: Every student will have to go through 6 weeks professional training or project. The training will have to be managed by students themselves at any commercial airlines and student is expected to get the subject of his choice approved by the university or by an experienced professional nominated for the purpose by the university or by the specific ASC of the university.



B.Sc. in Aeronautical Engineering Tech.

The university offer this program either Distance or Directed Independent Study and regular mode through specific Approved Support Centers and Internet (online). The Aeronautical Engineering concentration is designed in four specialist streams. Students who are interested in technical careers in aerospace and as preparation for more advanced study at the graduate level. Students will receive strong background in mathematics, the sciences, engineering technology, and the more technical courses and have to complete all total 126 US Credits in 4 Years.

The syllabus has divided as following:

A) General Education (GE) Requirements comprises of 20 courses (60 credits).

B) Engineering Core (EC) Requirements comprises of 10 courses (33 credits) and one practical training capsule. The training capsule of 6 weeks duration has been introduced to familiarize the students with various workshop practices.

C) Engineering Specialization (ES) Requirements comprises of 11 courses (33 credits). There are four under mentioned specialized streams in line with the practices prevalent in the Civil Aviation.

(i) Aero-Mechanical Stream

(ii) Avionics Stream

(iii) Maintenance & Production (Mechanical) Stream

(iv) Maintenance & Production (Electrical) Stream

A student can select either of the 4 specialist streams. Each stream has ten theoretical subjects and two practical training capsules. The ten theoretical subjects comprise 8 compulsory and one optional technical subjects and one compulsory management subject and one elective management subject. The optional group comprises of 29 subjects and a candidate may choose any one subject of his interest. Two training capsules, each of 4 weeks duration, have been introduced in each of the streams. One capsule is for familiarization with various laboratories in the respective stream and the second capsule is for professional training or project work in the industry.

Workshop Training: The Workshop Training Capsule of 6 weeks as per details in the Syllabus will be arranged by students under their own arrangement at all such facilities with engineering institutions, however, it will be necessary for the student(s) to produce a certificate, signed by qualified BE/B Tech Engineer certifying that the training capsule has been gone through by the student or by the specific ASC of the university.

Laboratory Training: Every student will have to go through 6 weeks training in familiarization with different laboratories as per the Syllabus. The training will have to be managed by students themselves at any of aero-institutions or by the specific ASC of the university, under supervision of qualified BE/BTech qualified engineer. A student may under go the training after successful completion of GE and EC courses.

Professional Training or Project Work: Every student will have to go through 6 weeks professional training or project work with ES courses. The training will have to be managed by students themselves at any commercial airlines and student is expected to get the subject of his choice approved by the university or by an experienced professional nominated for the purpose by the university or by the specific ASC of the university.

Exemption: Students having BE/BTech or its equivalent qualification will be entitled to get exemption from appearing in upto six subjects of GE courses, as per their discipline in BE/BTech course.

(a) The students belonging to Electrical/ Electronics and Allied streams may get exemption of subjects, namely, Applied Maths-I, Basic Electronics, Electrical Engineering, Microprocessors & Software Engineering, Engineering Drawing & Design, and Workshop Technology.

(b) The students belonging to Mechanical, Civil, Chemical and Allied disciplines may get exemption in subjects, namely, Applied Maths-I, Fluid Mechanics, Strength of Material, Engineering Thermodynamics, Engineering Drawing & Design, and Workshop Technology.

Course Requirements

General Education Courses (60 Credits)

Core Courses (33 Credits)

A 1 Applied Mathematics- 1 (3)
A 2 Fluid Mechanics (3)
A 3 Basic Electrocics (3)
A 4 Strength of Materials (3)
A 5 Engineering Thermodynamics (3)
A 6 Electrical Engineering (3)
A 7 Micro- Processor and Software Engineering (3)
A 8 Introduction to Aeronautics (3)
A 9 Engineering Drawing (3)
A 10 Workshop Technology (3)
BUS 418: Principles of Management (3)

Engineering Specialization Courses (33 Credits)

(a) Aero- mechanical Stream

AS 1 Applied Mathematics- 2 (3)
AS 2 Aerodynamics (3)
AS 3 Aircraft Structure- 1 (3)
AS 4 Propulsion-1 (3)
AS 5 Aircraft Structure- 2 (3)
AS 6 Airplane Performance, Stability & Control (3)
AS 7 Aircraft Design (3)
AS 8 Propulsion- 2 (3)
AS 9 Management of Systems (3)

(b) Avionics Stream

LS 1 Applied Mathematics- 2 (Same as AS 1) (3)
LS 2 Aircraft General Systems (3)
LS 3 Avionics- 1 (3)
LS 4 Control Theory & Practice (3)
LS 5 Avionics- 2 (3)
LS 6 Airplane Performance Stability & Control (Same as AS- 6) (3)
LS 7 Maintenance of Radio & Communication Systems (3)
LS 8 Aircraft Instruments (3)
LS 9 Management of Systems (same as AS 9) (3)

(c) Maintenance & Production Streams (Mechanical & Electrical)

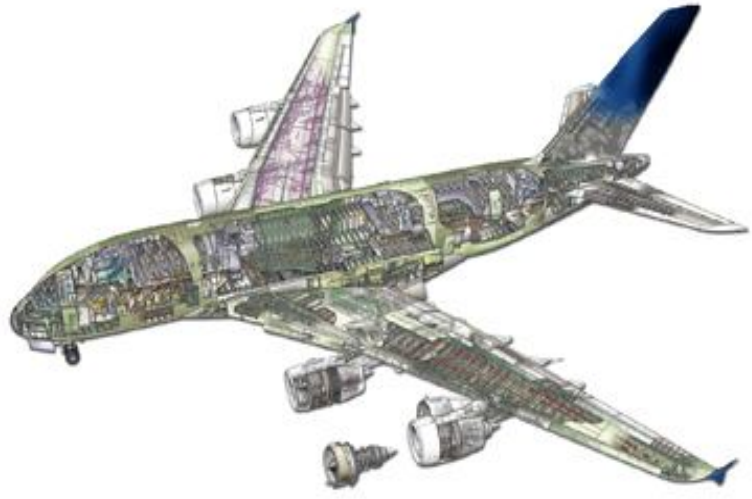
PS 1 Airworthiness & Air Regulations (3)
PS 2 Aircraft Materials (3)
PS 3 Control Theory & Practice (same as LS 4) (3)
PS 4 Aircraft Production (3)
PS 5 Production Planning & Control (3)
PS 6 Airplane Performance Stability & Control (Same as AS- 6) (3)
PS 7 Management of Systems (Same as AS- 9) (3)

(c.1) Maintenance & Production Stream (Mechanical)

PSM 1 Maintenance of Powerpoint & Systems (3)
PSM 2 Maintenance of Airframe & Systems (3)

(c.2) Maintenance & Production Stream (Electrical)

PSL 1 Maintenance of Electrical Instruments Systems (3)
PSL 2 Maintenance of Radio & Communication Systems (3)



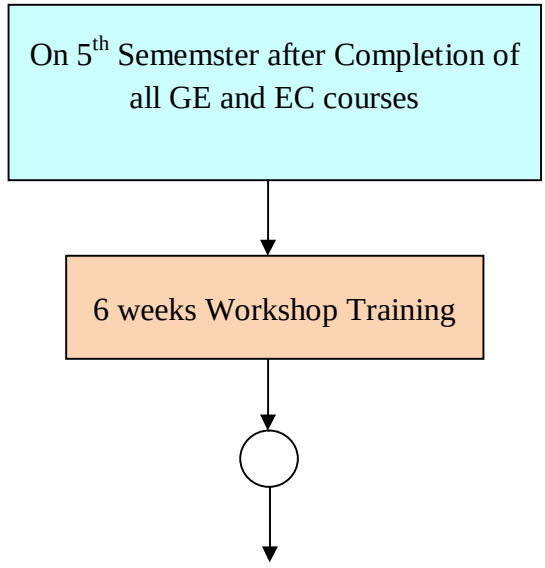
Restricted Elective

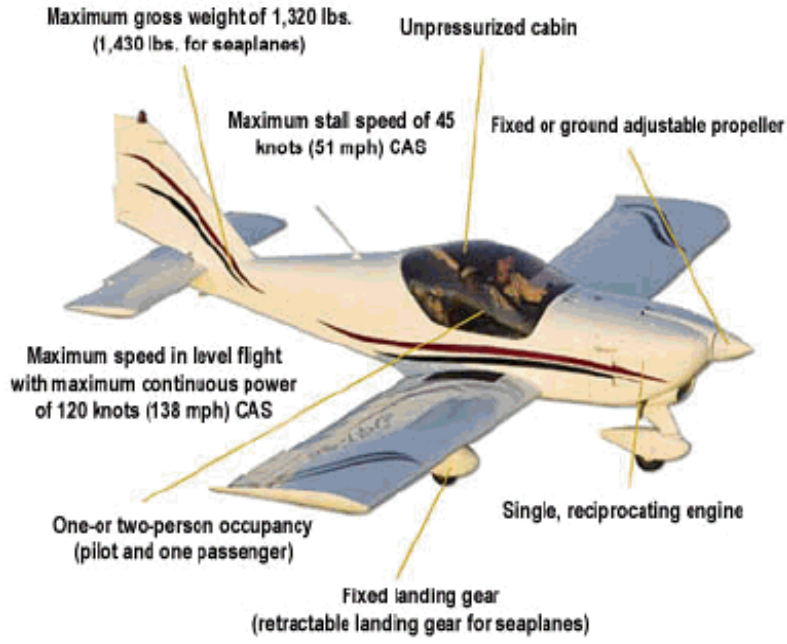
(One Technical Elective and One Management Elective)

OS 1 Principles of Helicopter Engineering (3)
OS 2 Gas Dynamics (3)
OS 3 Wind Tunnel Testing (3)
OS 4 Vibration & Aeroelasticity (3)
OS 5 CAD-CAM (3)
OS 6 Industrial Engineering (3)
OS 7 Tool Design & Fabrication (3)
OS 8 Statistics & Quality Control (3)
OS 9 Air Navigation (3)
OS 10 Aircraft Evaluation (3)
OS 11 Rocket & Missiles (3)
OS 12 Introduction to the Finite Element Methods (3)
OS 13 Computational Fluid Dynamics (3)
OS 14 Optimization Methods in Engineering Drawing (3)
OS 15 Non Destructive Evaluation (3)
OS 16 Ground Handling & Support Systems (3)
OS 17 Introduction to Automatic Flight Control Systems (3)
OS 18 Introduction to Wind Engineering (3)
OS 19 Composite Materials (3)
BUS 403: Principles of Accounting (3)
BUS 410: Organization & Management Theory (3)
BUS 411: Principles of Marketing (3)
BUS 416: Consumer Behavior (3)
BUS 404: Business Law (3)
BUS 408: Business Finance (3)
BUS 409: Behavioral Science for Business (3)
BUS 412: Research & Quantitative Methods (3)
BUS 413: Ethics & Social Issues in Business (3)
BUS 414: Organization Development (3)

Total Credits required for B.Sc. in Aeronautical Engineering is 126 Credits.

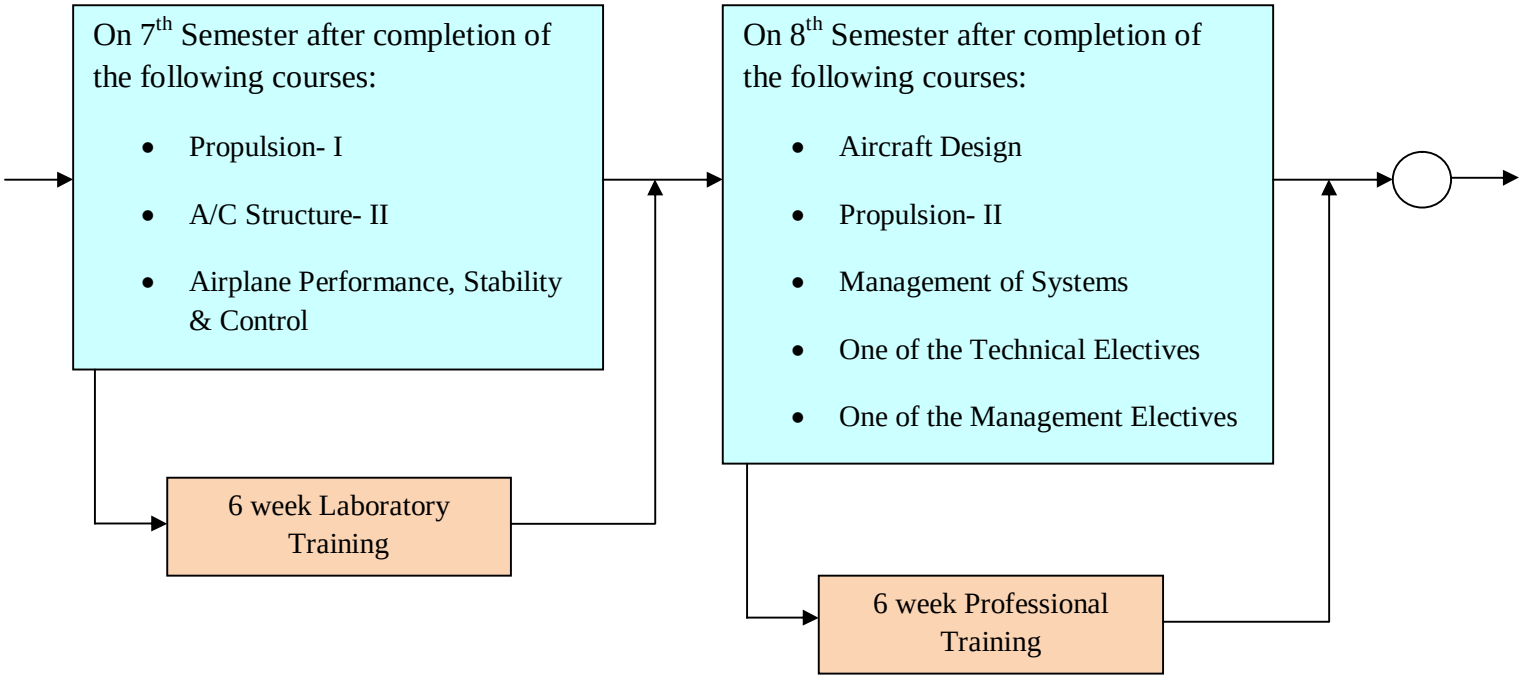
Route to Workshop Training:



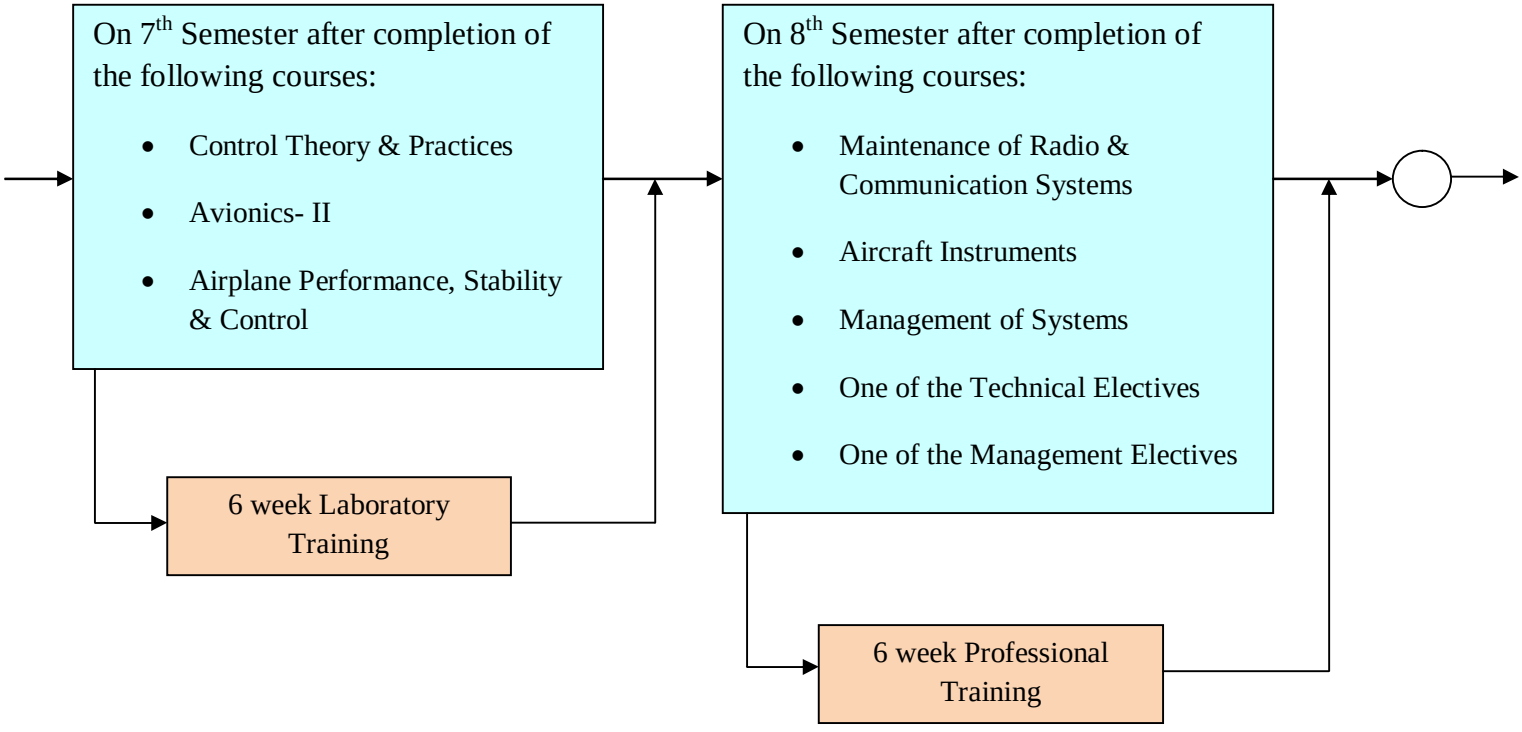


Route to Laboratory and Professional Training:

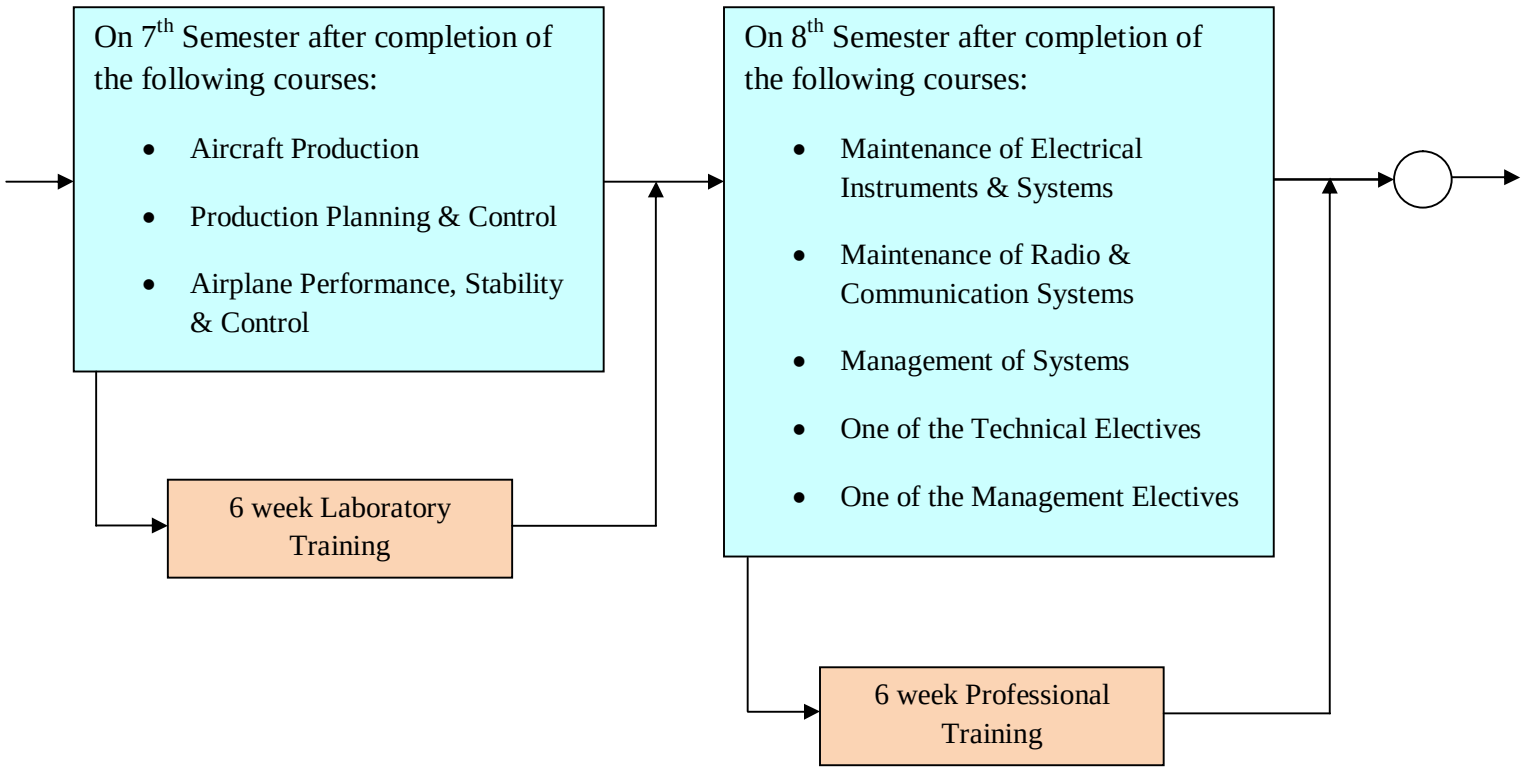
(a) Aero Mechanical Stream



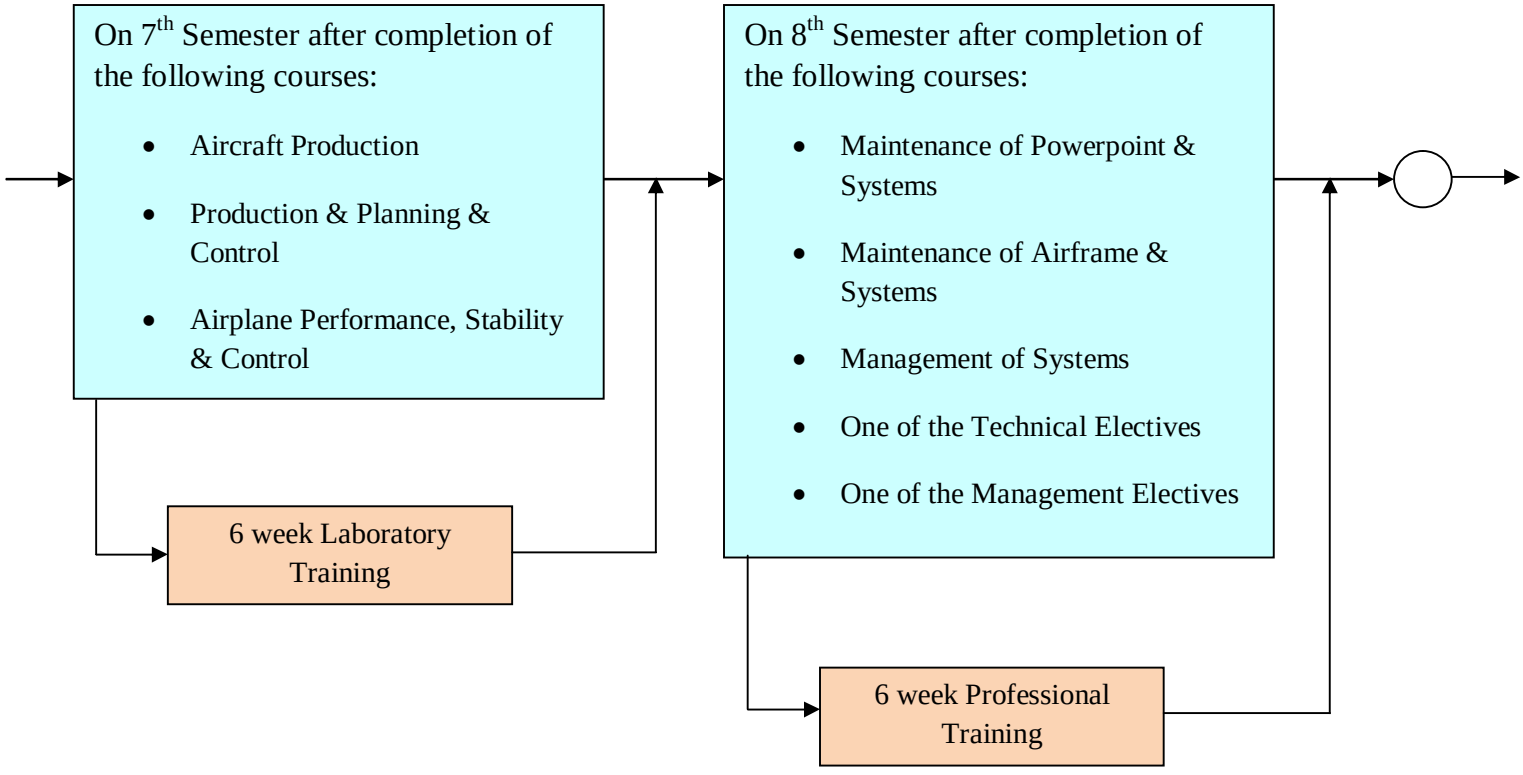
(b) Avionics Stream



(c.1) Maintenance & Production (Electrical) Stream



(c.2) Maintenance & Production (Mechanical) Stream



M.Sc. in Aeronautical Engineering Tech.

The master of science degree can be earned in one of three major areas: aerodynamics and fluid dynamics, aerospace structures and materials, and combustion and propulsion. Because the purpose of each program is to prepare the student for either a challenging professional career in industry or for further graduate study, the programs do not permit narrow specialization. Emphasis is on required coursework in several disciplines in which an advanceddegree engineer in a typical industrial position is expected to have knowledge and problem-solving expertise beyond that normally obtained during an undergraduate engineering education.

Course Requirements

The Master of Science in Aeronautical Engineering is offered with both thesis and nonthesis options. Each option requires a minimum of 30 credit hours of coursework. Prior to the completion of nine credit hours, the student must submit for approval a master's degree program plan to indicate the path chosen and the specific courses to be taken. For the thesis option, up to six credit hours of thesis work may be included in the 30 credit hourss requirement. The thesis can be primarily analytical, computational or experimental; or it can be some combination of these. In each case, students must demonstrate the ability to read the appropriate engineering literature, to learn independently and to express themselves well technically, both orally and in writing. For the nonthesis option, a student may replace the thesis with additional elective courses and a final program examination, following approval of a written petition submitted to the department head. Generally, students wishing to pursue an academic career are encouraged to choose the thesis option.

The program of study leading to the master's degree in Aeronautical engineering is offered in the three listed areas of specialization. The minimum program requirements consists of nine credit hours of core courses, six credit hours of mathematics and 15 credit hours (which may include six credit hours of thesis) of electives. Within the 15 credit hours of electives, six credit hours of coursework are restricted electives. The department maintains a list of restricted electives for each specialization.

The nine credit hours of core courses must be chosen in consultation with the student's adviser from one of the lists below.

(a) Aerodynamics and Fluid Dynamics

MAE 5110 Continuum Mechanics

MAE 5120 Aerodynamics of Wings and Bodies

MAE 5130 Viscous Flows

MAE 5140 Experimental Fluid Dynamics

MAE 5150 Computational Fluid Dynamics

MAE 5160 Gas Dynamics

MAE 5180 Turbulent Flows

MAE 6130 Experimental Methods in Turbulence

(b) Aerospace Structures and Materials

MAE 5050 Finite Element Fundamentals

MAE 5060 Applications in Finite Element Methods

MAE 5410 Elasticity

MAE 5430 Design of Aerospace Structures

MAE 5460 Fracture Mechanics and Fatigue of Materials

MAE 5470 Principles of Composite Materials

MAE 5480 Structural Dynamics

(c) Combustion and Propulsion

MAE 5130 Viscous Flows

MAE 5150 Computational Fluid Dynamics

MAE 5160 Gas Dynamics

MAE 5310 Combustion Fundamentals

MAE 5320 Internal Combustion Engines

MAE 5350 Gas Turbines

MAE 5360 Hypersonic Air-breathing Engines

TOTAL CREDITS REQUIRED (43)

Electives are selected from these course offerings and appropriate courses in mathematics, in consultation with the student's adviser. The topics of emphasis for aerospace engineering in the three areas of specialization include aerodynamics, computational fluid dynamics, experimental fluid dynamics, flow instability theory, combustion, aerospace propulsion and power, aerospace structures, composite materials, fracture mechanics and fatigue of materials.

PhD in Aeronautical Engineering Tech.

The doctor of philosophy degree program is offered for students who wish to carry out advanced research in any of the three areas of specialization listed under the master of science program. Other research areaswithin the field of aerospace engineering may be pursued depending on current faculty interests and available facilities.

Course Requirements

The degree of doctor of philosophy is conferred primarily in recognition of creative accomplishment and the ability to investigate scientific or engineering problems independently, rather than for completion of a definite curriculum. The program consists of advanced studies and research leading to a significant contribution to the knowledge of a particular problem. A student's research may have analytical, computational or experimental components, or some combination of these. Each student is expected to complete an approved program of study beyond that required for a master's degree as determined by the dissertation committee, pass the comprehensive examination, present a dissertation proposal acceptable to the student's committee, complete a program of significant original research, and prepare and defend a dissertation detailing the research. The program consists of a minimum of 43 credit hours of study beyond the master's degree. Of the minimum 43 credit hour requirement, requirement, at least 24 shall be for dissertation registration.

The doctoral program of study must be approved by the student's advisory committee and the department head. Considerable latitude is allowable in course selection, although appropriate advanced courses are expected to form a part of the student's program.

A representative distribution of these courses taken beyond the master's degree should include, as a minimum, six courses in any combination from the major area, the two related areas and mathematics. The following illustrates a minimum credit requirement for the doctoral program of study beyond the master's degree.

Students intending to pursue doctoral degrees must

take and pass a comprehensive examination after they have completed their non-dissertation courses, because it is a pre-requisite of the dissertation courses. One of the purposes of this examination is to sufficiently assess students'full knowledge on the dissertation title they wish to research.

Coursework and Dissertation Summary

Major Area of Specialization, two related Areas of Specialization and Mathematics (18)

Dissertation (24)

Comprehensive Examination (1)

TOTAL CREDITS REQUIRED (43)

A1: APPLIED MATHEMATICS- I (3)

Differential Calculus: Expansion by Maclaurin's and Taylor's series. Indeterminate forms. Functions of two variables, Limit - continuity, partial derivative, total derivative. Euler's theorem for homogenous functions; composite functions. Taylor's series for two independent variables maxima and minima for functions of two variables, errors and increments.

Tangents and Normals. Equations of tangents and normals, derivative of the length of arc (cartesian and polar co-ordinates), angle between radius vector and tangent at a point. Sub tangents and sub normals. Curvature: radius of curvature, approximate formula for curvature of beams, Newton's method of determining curvature, curve tracing, catenary, cycloid, astroid, cissoid, folium of descartes, etc.

Algebraic Aids: Convergence and Divergence of infinite series. Cauclur's root text, D'Alembarts Ratio Test, Gauss test, Demoivre's theorem, separation of Trigonometric, Hyperbolic and logarithmic functions into real and imaginary parts Analytical Geometry of three dimensions : Equation of a cone, with vertex at origin. Right circular cone: Equation of right circular cone. Equation of cylinder and right circular cylinder. Equation of central conicoids, standard surfaces of revolution.

Multiple Integrals: Evaluation of double and triple integrals : double integrals, rectangular and polar co-ordinates, change of order of integration, change of variable. Triple integrals. Surface and volumes of revolution, centroids of arcs, plane areas, Pappus theorems.

Matrices: Vectors, linear dependence of vectors, rank of a matrix, linearly independent vectors of a matrix, characteristics of vectors and characteristics roots of a matrix, Cayley- Hamilton theorem, Inverse of a matrix, diagonalization of a matrix.

A2:FLUID MECHANICS (3)

Introduction: Fluids : Definition of fluids, the science of fluid mechanics, fluid properties, capilliarity, surface tension, compressibility, units and dimensions.

Normal and Shear stresses in fluid flows, measurement of fluid velocity.

Regimes of fluid flows: Continuum and free molecular flow, inviscid and viscous flows, incompressible and compressible flows, Newtonian and Non-Newtonian flow, Aerodynamic force and moments, Dimensional analysis, Non dimensional parameters, M, Re, Fr etc.

Fluid Statistics: Pascal's law, types of forces on a fluid system, measurement of pressure, use of manometers and gauges, numerical problems. Hydraulic devices, forces on partially and fully submerged bodies, including that on curved surfaces, numerical problems, buoyancy, stability of floating bodies, centre of gravity and meta centric heights.

Description of Fluid Motion : Lagrangian and Eulerian methods, description of properties in a moving fluid, local and material rate of change, equation of conservation of mass for control volume.

Streamlines, path lines, streak lines, vorticity and circulation, laws of vertex motion, translation, rotation and rate of deformation of fluid particle. Equations of Fluid Motion : Euler's and Navier stokes equation, derivation of Bernoulli's equation for inviscid and viscous flow fields momentum equation and angular momentum equation in Integral form.

Inviscid- Incompressible Flow: Condition on velocity for incompressible flow, Laplace's equation, potential function, stream function. Basic elementary flows: uniform flows, source flows, doublet flow and vortex flow. Super -imposition of elementary flows, nonlifting and lifting flow over a circular cylinder. Pressure distribution over circular cylinder in real flow. Kutta - Juokowaski Theorem, Generation of lift. Lift on air foils.

Introduction to Viscous Flows: Qualitative aspects of viscous flows, viscosity and thermal conductivity, phenomenon of separation, Navier stoke's equations in vector form, viscous flow energy equation, some exact solutions of Navier stoke's equations: Plane poisuille flow, Couette flow, Hagen - Poisuelle flow, Hele - Shaw flow, flow through co-rotating cylinders. Transition from laminar to turbulent flow. Turbulent flow in circular pipe.

Introduction to Incompressible Boundary layer (BL) : BL Concept, BL Properties, derivation of Prandtl's BL Equation, Blasius solution, Karman's Integral equation, Turbulent BL over a flat plate, skin friction drag, BL Control. Dimensional Analysis and Similitude : Buckingham's theorem, non-dimensional groups, Geometric, Kinematic and Dynamic similarity, Applications.

Elements of Compressible Flows: Compressible flow properties, total Enthalpy, total temperature, temperature and pressure ratio as function of mach number. Mass flow parameter (MFP), Isentropic area ratio A/A*, velocity - area variation, 2-D small amplitude wave propagation, Adiabatic Steady Flow Ellipse. Description of flow regimes, Introduction to Normal and Oblique shock waves, working out solutions through Gas Tables/Charts.

A3:BASIC ELECTRONICS (3)

Transistors: Transistor operation, configurations, small signal analysis of Basic Transistor Amplifier, Stabilization, Essentials of a Biasing Network, Biasing Methods for Amplifiers. Field effect transistor, Junction Field effect transistor, MOSFET, and unijunction transistor. Integrated circuits.

Amplifiers and Ocillators: Classification of Power Amplifiers, Push Pull Power amplifier, Voltage Amplifiers, FeeBUSck in Amplifiers, different types of oscillators. Tuned collector oscillator, Hartley oscillator, Colpitt's oscillator, Phase shift and Wein Bridge oscillator.

Modulation and Demodulation: Principles of Radio Transmission and Reception. Modulation, Types of Modulation Amplitude Frequency and Phase Modulation Demodulation.

Analog and Digital: Operational Amplifier, Scale changer, sign changer, integrator, Differentiator, phase shifter, Logrithmic Amplifier, Positive and Negative Logic Systems, Logic Gates, Binary Number system, Binary Arithmetic Binary Code, Half Adder, Full Adder, Binary Adder, Digital input - output devices.

Power Control Devices: Silicon Controlled Rectifier, Characteristics, Triac, Diac Shockley diode, Silicon Bilateral Switch, Unijunction Transistor, Choppers, Inverters and their Applications.

A4:STRENGTH OF MATERIALS (3)

Introduction: Concept of Stress, axial loading normal stress, shearing stress, bearing stress, stress on an oblique plane under axial loading.

Deformation: Concept of strain, normal strain under axial loading, stress-strain diagrams, Hooke's law, modules of elasticity, Poisson's ratio, thermal stresses, bulk modulus, modulus of rigidity, shearing strain, stress-strain relationship.

Transformation of Stress and Strain: Principal stresses, maximum shearing stress,
Mohr's circle for plane stresses. Stresses in thin-walled pressure vessels, measurement of strain Rosette.

Pure Bending: Deformation in a transverse cross-section, derivation of formula for bending stresses. Bending stresses in composite sections.

Shearing Force and Bending Moment: Diagram for simply supported Beam, Cantilevers, with concentrated, uniformly distributed and variable loads. Castigliano's theorems, unit load method.

Deflection of Beams: Deflection in simply supported beams and cantilevers with concentrated loads, uniformly distributed loads and combination of these. Macaulay's method, moment area method.

Springs: Design of Helical (closed coiled) springs and leaf springs. Columns : Euler formula for pin-ended columns and its extension to columns with other end conditions. Rankine Gordon formula.

Torsion : Deformation in a circular shaft, angle of twist, stresses due to torsion, derivation of torsion formula, torsion in composite shafts. Loads on Airplane Components: Steady and unsteady load.

A5:ENGINEERING THERMODYNAMICS (3)

Fundamental Concepts and Definitions: Scope and limitations of thermodynamics. Thermodynamic system, state, property, change of state, thermodynamic equilibrium, path process, cycle density, pressure and their molecular interpretation - dimension and units - Zeroth law of thermodynamics and concept of temperature, temperature scales, work and heat definition and units of work and heat, work of frictionless process, Pvdiagram, indicator diagram.

First law of Thermodynamics: Statement of the first law. Energy. Internal energy and its microscopic interpretation, enthalpy, applications of first law.

Steady Flow Energy Equation (SFEE). The steady - state, steady flow process. The Joule-Thomson coefficient and the throttling process. Uniform state, Uniform flow process, SFEE and its applications.

Second Law of Thermodynamics: Limitations of the first law, heat engines, reversed heat engines and their performance, Kevlin-Planck's and Clausius statements of the
second law reversibility-reversible and irreversible processes: Carnot cycle thermodynamic temperature scale: Clausius-Clapeyron

equation.

Entropy: The property, entropy, principle of increase of entropy, calculation of entropy changes, T-S and h-s diagrams. Microscopic interpretation of entropy-Helmholtz (A) and Gibbs (G) functions.

Physical properties: Pure substance definition-internal energy and enthalpy of a pure substance, specific heats, equilibrium of phases, phase diagrams, phase changes, critical state, PVT surface, tabulated properties and process calculations. Maxwell relations.

Ideal and Real Gases: Definition-internal energy and enthalpy, specific heats and their calculation from simple kinetic theory, gas tables, Van dcr Waal's equation of state, principle of corresponding states, compressibility factor.

Vapour Power Cycles: Carnot cycle using steam, Rankine cycle, reheat cycle, binary vapour cycles.

Air Standard Power Cycles: Carnot cycle, Otto cycle, Diesel cycle, dual cycle, gas turbine cycles, inter cooling, reheating and regeneration, gas turbine jet propulsion, deviation from ideal cycles.

A6:ELECTRICAL ENGINEERING (3)

Electromagnetic: Coulomb's Laws, Gauss's Law, Biot-Savart Law, Kirchhoff 's Laws, Faradays Laws of Electromagnetic Induction, Magnetic Energy Stored in an Inductance AC Circuits (R-L-C), Composite Magnetic Circuits, Lifting power of an electromagnet, Stat-Delta Connections, Thevenin Theorem, Norton's Theorem, Maximum Power Transfer Theorem. Loop/Mesh Method of Analysis.

DC Machines: DC Generator, Magnetisation Curve Characteristics of DC Generators, Critical Resistance, E M F Equation, causes of failure to Build up Voltage, Applications. Principle of DC Motor, Types, Motor Charactseristics, Speed control Applications of DC Motors.

AC Machines: Classification of AC Machines, General theory of Induction Motors, Equivalent circuit characteristics and applications of Induction Motor, Theory of Synchronous Machines, Emf Equation of Synchronous Alternator, winding factors, Synchronous Motors, Synchronous condensers and applications, Amplidyne, metadyne, rectifiers and converters, solid state rectifiers, invertors, applications. Design of electric machines, radio interference suppression, fault finding, testing, protection, cooling, special requirements for airborne applications.

Modern Measurement System: Analogue meters for Voltage, current, Power, Energy, Digital Meters.

Generation, Transmission and Distribution: Different types of generating stations, choice of voltage for transmission and distribution, characteristics of overhead lines and cable. Different types of faults, Corona effect,. Ferranti effect, Inductive interference.

Energy Storage System and Utilization: Type of aircraft batteries: construction and details of lead acid and nickel cadmium batteries, capacity, charging, common defects and rectification. Distribution of electric power, cables and their identification, circuit breakers, OVPs, voltage regulators, relays, actuators, lighting. Electric heating-Induction and dielectric heating.

A7:MICROPROCESSORS AND SOFTWARE ENGINEERING (3)

The CPU: CPU register, ALU Control Unit, status, flags, introduction, execution, instruction, timing diagrams, instruction cycles, microprogamming and the control unit, chip slice units.

Logic beyond the CPU -Interfacing programs and data. Memory program i/o interrupt, error detection, various protocols, synchronous serial data transfer, programmable control/ timers. Real time clock, logic distribution among microcomputer devices.

Programming microcomputer, review of programming language, source program, object program, assembly language, memory addressing, the stack indirect addressing, indexed addressing, base relative addressing, memory segmentation., Introduction to set a - CPU architecture. A description of instructions, advanced microprocessor instruction set concepts.

Boolean algebra, postulates and theorems, standard forms, formulation of switching functions, simplification of Boolean expressions. Basic building block, realization of switching function using NAND and NOR gates. Flip flops, counters and shift registers.

Introduction to computers, computer characteristics, types of programming languages. Introduction to BASIC, fundamental concepts of BASIC language such as numbers, variables and formulas. BASIC statements, BASIC programs, branching and looping, additional features of BASIC.

Advanced BASIC, functions

and sub-routines, vectors and materials, data files, introduction to micro computer BASIC.

Programming using Fortran IV, Fortran statement constants and variables, arithmetic operation and expressions, logical constants and operations, logical expressions, rading and printing formats, control and decision statements, GO TO statement, IF statement, DO loop - DO statement, continue statement. Multi-dimensional arrays and nested DO loops, library functions, sub-routines and simple Fortran programmes, Computer Languages such as C and C+.

Central Maintenance Computer Systems; Data Loading Systems; Electronic Library Systems.

A8:INTRODUCTION OF AERONAUTICS (3)

Note: This is first exposure of Airplane as a whole to the students. Frequent use of free hand sketches shall prove useful in understanding and answering in examination.

Introduction : Mankind's desire to fly, various efforts in Pre-Wright Brothers era - brief historical sketch, Wright flyer, Earlier types of flying machines, Development of aeronautical science in America and Europe. Progress in Aircraft design, aerospace applications

Current Status : Different types of heavier than air vehicles, along with prominent features. Airplane, Helicopter, Hovercraft, V/STOL machines, modern developments

Airplane Aerodynamics : Nomenclature used in Aerodynamics, different parts of airplane. Wing as lifting surface, Types of wing plan forms, Aerodynamic features like Aerofoil pressure distribution, Aerodynamic forces and moments, Lift and Drag. Drag polar, L/D ratio, high lift devices, Airplane performance like Thrust / Power available, climb and glide, maximum range and endurance, take off and landings. Illustrations through sketches/plots.

Airplane Stability and Control : Airplane axis system, forces and moments about longitudinal, latheral and vertical axes, equilibrium of forces developed on wing and horizontal tail, centre of gravity, its importance in stability and control. Control surfaces elevators ailerons and rudder.

Airplane Propulsion : Requirement of power : various means of producing power. Brief description of thermodynamics of engines. Piston engines, Jet engines. Engine airframe combinations of various types, their performance. Detailed functioning of components of a Piston-Prop engine. Use of propellers as means of producing forward thrust. Functioning of Jet engine, turbo-prop, turbo-fan, turbo-shaft, Prop-fan, Possible locations of power plant on airplane, Rocket Propulsion, Classification of rockets like liquid and solid propellant rockets.

Airplane Structure, Materials and Production : Structural arrangement of earlier airplane, developments leading to all metal aircraft. Strength to weight ratio - choice of aircraft materials for different parts. Detailed description of wing, tail and fuselage joints. Stress-Strain diagrams, Plane and Space, Trusses, loads on airplane components, V - n diagram. Mechanical properties of materials.

Materials for different components, use of composites. Aircraft production methods and equipment.

Aircraft Instruments : Flight instruments : Air speed indicators, Altimeters, Rate of climb/descent meter, Gyro based instruments. instruments. Basic instruments in Avionics.

Engine Performance measuring Aircraft Systems : Elementary ideas about Hydraulic and pneumatic systems, pressurization, temperature control and oxygen system. System Integration, accessories. Aircraft Electrical System: Generation and distribution of Electricity on board the airplane. Flight Control System temperature / Environment, Aircraft Fuel System, Fire Protection, Ice and Rain Protection System.

Airplane Design, type Centrification and Airworthiness: Basic steps in airplane design, airplane specification part/component wise specification, design and testing for certification, Airworthiness requirements, Air safety requirements and standards.

A9:ENGINEERING DRAWING & DESIGN (3)

Plane Geometry : Construction of plane figures and curves used in Engineering Practice. Parabola, ellipse, hyperbola, rectangular hyperbola, cycloids, involutes of a circle, spiral.

Practical Solid Geometry: Projections, types of projections, first angle, first angle and third angle projection, projections of points, lines, traces of lines, projection of planes, projection of soild CG sections of solids such as prisms, pyramids, cylinders, cones and spheres. Development of surface for solids viz-cylinders and cone. Isometric scale and projection.

Machine Drawing: 1. Diagonal scales. 2. Types of lines, lettering and dimensioning. 3. Forms

and proportions of bolts and nuts. 4. Engineering fastenings: (a) temporary - bolts and nuts and screws and nuts, etc., studs and nuts, keys cotters and pins; (b) permanent fastening-Riveted joints. 5. Helics and Screw threads. 6. Tolerances, Limits and fits.

Bearing wall brackets, shaft couplings, toothed gearing, bolt and rope pulleys. Simple machine parts such as pistons, connecting rod ends, cross-heads, stuffing boxes, cranks and crankshafts, Eccentrics, valves, pipes and pipe joints.
Graphic statics: (1) Resultant of coplanar concurrent forces, force polygon, funicular polygon, conditions of equilibrium of a system of coplanar, concurrent and non-concurrent forces, resultant of parked forces. (2) Area centre of gravity and moment of inertia of plane figures
3 (a) Stresses in simple frames-subjected to deadload 3 (b) Stresses in roof trusses subjected to combined dead and wind loads.

A10: WORKSHOP TECHNOLOGY (3)

Materials : Composition, physical and mechanical properties. Engineering uses of common metals and their alloys such as cast iron and varieties of cast iron, wrought iron, mild steel, medium carbon steel. Tool steels, highspeed steels. Effect of alloying elements. Alloys of aluminium, tin, copper, zinc and magnesium, bearing materials.

Heat treatment of steels : Relation between heat treatment and physical properties of steels, critical temperatures, annealing, normalizing hardening, tempering, case carburising and hardening, nitriding and other surface hardening methods, quenching, Hardness number. Hardness Testing Machines.

Fitting Work : Files, their specifications and uses, marking scheme for a fitting job, surface plates, vee blocks, marking block, steel scale, punch, vernier caliper, micrometer, hammers, scrapers, chisels, angle plates, bench vice, spanners - their specifications and uses, Pipe and chain wrenches, hacksaws. Drilling, lapping and die cutting.

Sheet metal working : shearing, bending, cup drawing, operations, presses and press working operations, classification of presses, press tools.

Shaping Machines : Principles of operation - types of driving mechanisms, feed and speed control, hydraulic shapers.

Slotting Machines : Principle of operation - driving mechanisms, feed control

Planing Machines : Methods of driving planners - clamping of work, cutting speeds, etc.

Drilling Machines : Vertical, radial, speed and feed control mechanism

Lathes: Types of Lathes : Description of lathe, headstock, tailstock, gear box, carriage, apron, feed controls - longitudinal and transverse, compound tool resets, cutting speeds and feeds, leadscrew, change gears, Lathe accessories, Lathe Operations: surfacing, sliding and screw cutting, taper turning.

Chucks : 3-jaw, 2-jaw, use of soft jaws, faceplate - carriers Milling Machine : Plane milling machine, universal milling machines, universal dividing head, rotory table, cutting tools used in milling.

Numerical Control Manufacturing : Nomenclature of NC Machines, Axis, types of NC Machines, Features of NC Machine Tools, Machine Control Unit, Computer programme for computer aided part programming.

IMPORTANT POINTS:

1. Candidate to inform the university 4 weeks in advance about the place where he intends to undergo Workshop Training.

2. The training should be under the supervision of a "Qualified Engineer" in a Workshop/ Company/ Organisation/ Engineering College*/ Polytechnic*/ ITI/ Institutionrecognized by any Civil Aviation Autority for conduction 3 years AME course (*Approved by any Government).

3. The certificate for completion of 6 week Workshop Training must be signed by the Principal or Head of Organisation/ Head of Department/ In-charge Workshop.

4. The training will be for a period of 6 weeks with 2 weeks each in any three shops from the above mentioned seven shops.

EXEMPTIONS:

The candidates with following qualifications are exempted from 6weeks Workshop Training capsule

a) Graduate Degree in Engineering (b) Diploma in Engineering (3years) (c) AME course (3 years duration)

AS1:APPLIED MATHEMATICS –II (3)

Vector Calculus : Curl, grad and divergence of a vector, physical interpretation, integration of vector functions, line, surface and volume integrals, Green's theorem, Stoke's and Divergence theorem. Irrotational and solenoidal fields, derivations of Poisson and Maxwell's electro magnetic field equations.

Complex Variables : Limit, continuity, Analytic function,

Cauchy Reimann Equations, Laplace's equation, Cauchy's Integral theorem, Cauchy's Integral formula, Morera's theorem, Louville's theorem. Tailor and Laurent series, Zeros and singularities, Residue, Residue theorem and simple applications in the evaluation of real definite integrals with circular contours.

Fourier Series : Dirichlet's condition, general form of Fourier series. Expansion of function in the form of Fourier series, fourier integrals, evaluation of fourier coefficients.

Differential Equations : Formation of Differential equations and their order and degree, methods of solving first order and first degree differential equations. Linear differential equations of second and higher order with constant coefficients.

Partial Differential Equations : Formation and solution of first order partial differential equations, solution of linear p.d.e.'s of higher order with constant coefficients. Classification of linear second order equations with constant coefficients. Solution of 1-D wave and conduction (heat) equation in cartesian coordinates. 2-D Laplace's equation in cartesian and polar coordinates.

Statistics : Random variables, probability distributions: Binomial, Poisson and Normal, sampling theory, Random samples, sampling distributions for means, difference of means, proportions tests of significance, chi-square test of goodness fit.

Applied Numerical Techniques : Errors in Numerical calculations, round off and truncation errors, solution of algebra and transcendental equations in one variable using generalized Newton's method for multiple roots, Chebyshev's method and Halley's method.

Interpolation : Finite differences, forward, backward and central differences. Application space points.System of Linear Algebraic Equations and Eigen Value Problems. Numerical Differentiation and Integration.

AS2: AERODYNAMICS (3)

Conformal Transformation : Complex potential function, Blasius theorem, principles of conformal transformation, Kutta Joukowski Transformation.

2-D Incompressible Flows around Thin Airfoils : Circulation and the generation of Lift, Bound vortex and starting vortex, Kutta condition, Glauert's thin airfoil, theory, thin symmetric flat plate airfoil, Circular arc foil, general thin airfoil section, the flapped airfoil. Determination of mean camber line shapes for uniform and linear distribution ofcirculation, flow about multi element airfoils.

Incompressible Flow about Wings of Finite Span : Downwash and Induced drag, Biot-Savart's law and Helormholtz's theorems. Vortex system around a lifting wing, Prandtl's classical lifting line theory, unswept wings, fundamental equations, elliptic lift distribution, influence of aspect ratio on lift and drag, drag polar and lift correlation to aspect ratio. Techniques for general spanwise distribution, monoplane equation, calcuation of lift and vortex induced drag, numerical problems based on above.

Panel methods : General description of the panel methods. Vortex Lattie Method: wing as a surface covered by horse shoe vortices (HSV), velocity field due to a general HSV, application of boundary conditions and working out solution for a planar wing, extension to a swept wing.

Delta Wing Aerodynamics : Polhamus's leading edge suction analogy, preliminary calculations of lift coefficient, description of flow field, effect of aspect ratio on lift coefficient, leading edge extensions, high angle of attack effects.Ground effect and formation flying. Dynamics of a Compressible Inviscid Flow Field : Basic aerodynamic effects, second law of thermodynamics and irreversibility, (Recap from Fluid Mechanics of the relevant portion on adiabatic and isentropic flow in variable area stream tube). Characteristic Equation and PrandtlMeyer flow, shock waves. Shock wave boundary layer interaction - an introduction.

Compressible Subsonic and Transonic Flows : Compressible Subsonic Flow: Linearized theory for subsonic compressible flow about a thin wing at small angles of attack. Transonic Flow past unswept airfoils, swept wings at transonic speeds, Area-Rule, forward swept wing, Extension to transonic aircraft.

2-D Supersonic Flows around thin Airfoils : Linearized theory and its application for calculation of lift, drag and pitching moments.Busemann's theory and shock expansion technique.

Introduction to CFD: CFD as a design tool; explicit and implicit methods; O,C,H types of grids, various space discretisation methods such as FDM, FVM, FEM; concept of state update formula.

AS3: AIRCRAFT STRUCTURES- I (3)

V-n diagram for the loads acting on the aircraft, salient features of

theV-n diagram. Flight envelope for different flying conditions.

Analysis of statically indeterminate structures : planar and space trusses; Deflection of Beams; Area moment Method, slope-deflection method, moment distribution method, Basic elasticity, stresses and strains, equations of equilibrium, plane stress and plane strain problems, compatibility equations, stress - strain relations.

Strain energy and complementary energy, total potential energy; principle of virtual work; principle of the stationary value of the total potential energy and total complementary energy. Application to deflection problems, application to statically indeterminate problems, Rayleigh Ritz and Galerkin techniques.

Bending of open and closed section thin walled beams, shear of open section and closed section beams, shear centre and centre of twist, Torsion of closed and open section beams, membrane analogy. Deflection of open and close section beams.

Aircraft materials-properties of flight vehicle materials importance of strength to weight ratio, temperature variations, factors affecting choice of materials for different part of airplane.

Light metal alloys: heat treatment, high temperature and corrosion resistant alloys, Aircraft steels, effect of alloying elements, heat treatment, selection of steel for aircraft application composite materials: classification and characteristics of composite materials, strength to weight comparison with metals, fiber reinforced and particulate composites.

AS4:PROPULSION- I (3)

Aircraft Piston Engines : The internal combustion engine process, brief historical sketch, spark ignition and compression ignition, (SI and CI) engines, 4-stroke and 2-stroke engines. Combustion processes various types of arrangements for multi cylinder aircraft engines. Intake and Exhaust manifolds. IHP, BHP and SHP Engine performance, Effect of altitude and speed, power required and power available. Super charging, types of super chargers.

Propellers : Ideal Froude Momentum theory, blade element theory, vortex theory, relative merits, numerical problems, use of propeller charts. Selection and choice of propellers. Fixed/variable pitch and constant speed propellers, Relative merits and applications, Ducted propellers, prop-fan, Helicopter Rotor in Hover and climbing. Materials for propellers.

Elements of Heat Transfer :
a) Conduction : Heat Transfer process, Heat conduction, Thermal conductivity, General equation of heat conduction in 1-D and 2-D.
b) Convection and Radiation Heat Transfer: Convection process, free convection heat transfer from vertical flat plate, planes, cylinder and sphere, free convection.
c) Thermal Radiation and Emissive power. The Plank distributive law, Radiation properties.

Aircraft Gas Turbine Engine : Compressor and Turbine work, compressor and turbine efficiencies, general layout, gas flow diagram. Engine intake and Exhaust nozzles, After burner arrangements for thrust augmentation.Compressors;centrifugal and axial types of compressors, Materials of Construction.

Combustion chambers : Various arrangements, simplex and Duplex type of Burners. Materials for combustion chambers

Expansion process : Turbine and its action, constructional details of turbine. Materials of construction, general arrangement of turbo-prop and turbo-shaft engines. High and Low by pass ratio, turbo-fan engines, dual shaft gas turbine engines, its merits over single shaft engines.

Gas Turbine Systems and Components : Fuel system components, various types of fuel systems, lubricating oils and lubricating systems. Secondary air systems, arrangements of bleeding of compressor air for aircraft pressurization and oxygen systems. Engine starting systems.

AS5:AIRCRAFT STRUCTURES- II (3)

Bending of thin plates; pure bending, plate subjected to bending and twisting, plates subjected to distributed load, combined bending and in-plane loading of a thin rectangular plate, energy method for bending of thin plates.

STRUCTURAL STABILITY : Euler buckling of columns : inelastic stability of columns, effect of initial imperfections, energy method for the calculation of buckling loads in columns, flexural and torsional buckling of the thin walled columns, buckling of stiffenced plates, local instability. Stress analysis of aircraft components: tapered beams, fuselages, wings, fuselage frames, wing ribs, shear lag.

Matrix methods of structural analysis : stiffness matrix for an elastic springs, pinjointed frame work, application to statically indeterminate frame works, matrix analysis of space frames, stiffness matrix for a beam.

Concept and introduction to finite element methods.Introduction to vibration : Free and forced vibration of single, two and multiple degrees of freedom systems, Principal modes, normal modes, static coupling and dynamic coupling.

AS6:AIRPLANE PERFORMANCE, STABILITY AND CONTROL (3)

Atmosphere : ISA, Geopotential and Geometric altitude, Troposphere and Stratosphere, stability of atmosphere.

Aerodynamic characteristics : Drag Aerodynamics, Drag polar, estimation of drag. Forces and moments from dimensional analysis, pressure distribution over airfoils, variation with angle of attack, aerodynamic centre, centre of pressure - related problems. Estimation of CL, CD and CM from pressure distribution , variation of aerodynamic coefficients with Reynolds number and Mach number. Effect of span, aspect ratio, planform, sweep, taper and twist on aerodynamic characteristics. High lift devices. V/STOL configurations.

Airplane Performance in Steady and Level Flight : Equations of motion of aircraft, variation of drag with flight, power required and power available, minimum drag and minimum power conditions, climbing and gliding performance. Airplane Performance in

Accelerated Flight : Take off and landing distances, Jet Assisted Take off, Range and Endurance. Turning flight performance.

Static longitudinal stability : Stick fixed static longitudinal stability, neutral point, power effects, stick free static longitudinal stability. Hinge moments, Aerodynamic Balancing, Static Margin. In flight measurement of stick fixed and stick free neutral points.

Maneuvering flight : Elevator angle per g and stick force per g maneuver margin. Lateral and Directional Stability and Control: Assymmetric flight, weather cock stability, Rudder fixed and Rudder free static directional stability - Rudder lock, dihedral effect. Control in Roll, Aileron control power. Cross coupling of lateral and directional effects. Numerical problems.

Dynamic Stability : Equations of motion of airplane, stability derivatives, split-up of equations in symmetrical and non-symmetric groups of motion. Analysis of short period and phugoid mode Analysis of roll and spiral modes, Dutch Roll.

AS7 AIRCRAFT DESIGN (3)

Preliminaries : Aircraft Design Requirements, specifications, role of users, Aerodynamic and Structural Consideration, Importance of weight. Airworthiness requirements and standards. Classifications of airplanes. Special features of modern airplane.

Air Loads in Flight: Symmetrical measuring loads in flight, Basic flight loading conditions, Load factor, Velocity - Load factor diagram, gust load and its estimation, Structural limits.

Airplane Weight Estimation : Weight estimation based on type of airplane, trends in wing loading, weight-estimation based on mission requirements, iterative approach Basics of Wing Design : Selection of airfoil selection, influencing factors. Span wise load distribution and planform shapes of airplane wing. Stalling, take off and landing considerations. Wing drag estimation. High lift devices

Structural Design : Cockpit and aircraft passenger cabin layout for different categories, types of associated structure, features of light airplanes using advanced composite materials. Structural aspects of design of airplane, Bending moment and shear force diagram. Design principles of all metal stressed skin wing for civil and military applications

Landing Gears : Different kinds of landing gears, and associated arrangement for civil and military airplanes. Preliminary calcul tions for locating main and nose landing gears.

Integration of Structure and Power Plant : Estimation of Horizontal and Vertical tail volume ratios. Choice of power plant and various options of locations, considerations of appropriate air-intakes. Integration of wing, fuselage, empennage and power plant. Estimation of centre of gravity.

Introduction to advanced concepts : Supercritical Wings, relaxed static Stability, controlled configured vehicles, V/STOL aircraft and, rotary wing vehicles. Design and layout of flying controls and engine controls.

AS8: PROPULSION-II (3)

Steady 1-D Gas Dynamics : Basics, Simple flows; Nozzle flow, nozzle design, nozzle operating characteristics for isentropic flow, nozzle flow and shock waves. Nozzle characteristics of some operational Engines. Rayleigh flow and Fanno flow.

Inlet: design, sizing and performance for various flow regimes.

Nozzle : C-D Nozzle performance Effects of back pressure, exit area ratio and mass flow.

Combustion Systems: Basics of

combustion chamber, Ignition system, Flame stability and after burners.

Parametric Cycle Analysis of Ideal Engines : Engine cycle analysis and basic assumptions. Applications to (i) Ramjet, (ii) Turbojet with and without after burner, (iii) Turbo fan Engine, optimum by pass ratio (iv) Turbo-Prop Engine Cycle analysis of real engines:

Axial Flow Compressor : Euler's Turbo-machinery equations. Axial Flow Compressor analysis, cascade action, flow field. Velocity diagrams, flow annulus area stage parameters. Degree of reaction, cascade airfoil nomenclature and loss coefficient, diffusion factor, stage loading and flow coefficient, stage pressure ratio, Blade Mach no., Repeating-stage, Repeating-row, Meanline design. Flow path dimensions, number of blades per stage. Radial variation, Design Process, Performance.

Axial Flow Turbine : Introduction to turbine analysis, mean-radius stage calculations, Stage parameters, stage loading and flow coefficients, degree of reaction, Stage temperature ratio and pressure ratio, Blade spacing, Radial Variation, Velocity ratio. Axial Flow Turbine stage Flow path dimension, stage analysis, Multistage design steps of design- single stage and two - stage. Turbine Performance. Blade Cooling.

AS:9 MANAGEMENT OF SYSTEMS (3)

Systems Approach to Management : Systems concept; Types and characteristics of manufacturing and service systems; overall conceptualization of business systems, model building; Planning, analysis and control of engineering systems; Communication for planning and control.

Organisational Concepts : Management hierarchy for different types of industry: Organisation principles, structures, tools for coordination and planning

Human Resource Development : Management function for human resource planning- people, profit and productivity. Staffing, recruitment policy, training and development programmes, motivation, incentive and promotion policies, collective decision-making, trade unions and collective bargaining.

Projectology : Project formulation and implementation strategies. Monitoring and control of projects. Project evaluation - benefit - cost analysis.

Management Information System: Significance of information as a corporate resource. Identification, collection, storage and retrieval of information. Frequency of reporting and updating. Introduction to Decision Support Systems.

Planning and Control of Production Systems : Product design and development, product life cycle; Demand analysis and forecasting - Time series analysis, simple exponential smoothing models, input - output analysis. Resource requirement planning. Basic models for shop loading, sequencing and scheduling. Materials requirement planning. Management functions for planning maintenance, maintenance strategies.

Managerial Economics : Concepts of managerial economics; Production and cost analysis; Managerial uses of production and demand functions. Determinants of price - pricing under different objectives. Role, objective and goals of financial management.

LS2:AIRCRAFT GENERAL SYSTEMS (3)

General Maintenance Practices : Jacking, levelling, and mooring, refuelling and defuelling of aircraft, safety precautions. Hydraulic and fluid systems, precautions against contamination. Identification colour coding, symbols and other markings to identify the fluid systems.

Hydraulic system : Advantages and disadvantages: types of circuits: flow through pipes: pumps and motors: static performance: actuators: seals and backup rings: reservoirs: accumulators: contamination c ontrol filters: tubings and hose pipes: indicating and warning systems: emergency and redundant systems valves: flow dividers and integraters:
cooling systems.

Servo-Control System : Stability and response: electro-hydraulic servo systems: position and force feeBUSck: frequency response: principles of automatic control

Pnuematic Systems : Airconditioning and pressurisation systems: deicing systems: heat loads: plumbing: coldair units: compact heat exchangers: valves: filters: air bottles: capsules and bellows: indication and warnings.

Oxygen Systems: Gaseous and liquid oxygen systems: breathing masks: oxygen regulators: oxygen bottles: liquid to gas converters: emergency systems: pressure suits:
indication and warnings.

Landing Gear Systems : Types of landing gears and their design principles: shock absorbing devices: retracting mechanisms: wheels and brakes: antiskid system: steering systems: indications and dwarnings.

Fuel Systems : Types of fuels: their properties and

testing: colour codes: fuel requirements: pumps: fuel transfer systems: fuel tanks: plumbing: valves: indications and warnings.

Lubrication Systems : Types of lubrication systems: lubricants: cleaning agents; Auxiliary Power Unit - Construction and operational features.

Fire Protection Systems : Types of systems: Flame proofing: Fire walls: Fire detection systems: Fire extinguishing systems.

Seat Safety Systems : Ejection seats: Survival packs: Parachutes: Pilot's personal equipment: life rafts: Doors, Windows and Emergency exits, Seat belts.

System Testing : Ground handling equipment.

LS3:AVIONICS –I (3)

PRINCIPLES
Information : Communication systems: signals, analogue, digital and coded forms, time and frequency representation, signal spectra, types of distortion

Information : Nature and measure, influence of bandwidth and signal/noise ratio on channel capacity, elements of Shannon's theorem and its implications. Problems ofcommunicating in presence of noise.

Modulation : Amplitude, angle and phase modulations, single and vestigial sideband forms, demodulation, Superheterodyne principle, automatic gain and frequency control, typical circuit arrangements.

Pulse modulation : sampling principles, sampling criterion, quantisation and quantisation noise, selection of number and distribution of quantisation levels, bandwidth requirements, examples of coding and decoding circuits.

Transmission : Transmission lines and their circuit representation, characteristic impedance, complex propagation constant, standing wave radio, matching and impedance charts.

Channel Performance : Amplitude and phase distortion, phase and group delay distortion caused by multiple effects. Noise, origin, measurements, noise figure and noise temperature effect on channel performance. Frequency and time division multiplexing.

RADIO & TELEVISION ENGINEERING
Radiation : Principles: application of basic formulae for unipole and dipole, aerials, effective height, directional, properties, gain, impedance, linear arrays, traveling wave aerials, rhombicas, parasitic elements.

Propagation : Principles: influence of ionosphere and troposphere reflection from earth's surface, field strength calculations, fading diversity reception. Television Waveforms: Scanning, interlacing, horizontal and vertical resolution, bandwidth requirements. Colour television, principles, chrominance and luminance signals, basic definitions of photometry and colorometry, trichromatic systems.

Circuits : Circuits for communication transmitters and receivers, block diagrams and examples of typical circuits, television receivers, Camera and display tubes.

Systems : Description of typical point-to-point and broadcast radio systems, choice of typical parameters (eg. operating frequency, type of modulation, transmitter power level, bandwidth).

Special Systems (Principles) : VHF, UHF, Fibre optics and Laser Technology, Satellite communication and related equipment, electronic counter measures, low-level TV and Head-down displays, CR T displays, Direction finding. Air borne telemetry systems. Laser and infrared systems, Air data and flight recording systems. Satellite communication, spread spectrum technology: satellite transponders, earth Terminals.

LS4: CONTROL THEORY AND PRACTICE (3)

Introduction to Laplace transform, Fourier transforms, Definition of feeBUSck terms, symbols to represent feeBUSck control variables, characteristics of basic feeBUSck loop. Introduction to dynamics of stable and unstable vehicles. Definition of Aerodynamic coefficients, force and moment equations, definition of relaxed static stability , CCV concept in modern flight control system.

Models of Components and Systems : Its variables and equations, modeling of passive electrical components and systems, static and dynamic variables, modeling of DC motors and servo systems, transducer, sensors and actuators, transport delay.

Frequency response analysis :

a) Open loop and closed loop poles and zeros
b) Nyquist diagram
c) Nyquist stability criterion
d) Stability margins, illustration of phase margin and gain margins

The BODE magnitude plot : Studies on BODE phase plot, stability margins on the BODE plot, Time delay effects.

The root focus method : the

locus equations, properties and sketching rules, loci for systems.

Time Response : Steady state error, transient response to a input, performance measures.

System design : (a) Signal conversion and processing: Digital signals and coding, data conversions and quatization sample and hold devices, digital to analog conversion, analog to digital conversion, the sampling theorem, reconstruction of sampled signals.
(b) Compensation networks, system effects of offset and noise.
(c) Servo components: Synchros, Sensors, actuators, computers (d) Electronic design aspects: rating, time delays, reasonable values, etc. proportional controller, proportional integral controller, proportional integral differential controller (PID)

The Z-Transform : (a) Definition of Z Transform (b) Evaluation of Z Transform (c) Mappling between s-plane and the z-plane (d) the inverse Z transform (e) Theorems of Z transform.

The State Variable Technique : (a) State equations and state transition equations of continuous data system (b) State transition equations of digital systems (c) Relation between state equation and transfer function (d) Characteristic equation, eigen values and eigen vectors
(e) Diagonalisation of A matrix
(f) Methods of computing the state transition of A matrix.

Stability of digital control system, time domain analysis, frequency domain analysis.

LS5: AVIONICS-II (3)

Radar Engineering : Radar definition, Radar range equation, pulsed, CW and Doppler Radars, MTI, Noise Figure Consideration, various types of radar displays, Detection of radar signals in Noise.

Microwave Engineering : Various types of radar transmission Lines, Rectangular and circular waveguides, coaxial lines, field patterns, modes (high order and evanescent), passive components (eg., Directional couplers, filters, isolators and circulators)

Devices: Magnetron, Klystron, backward wave oscillator, Traveling wave tubes, Amplifiers and parametric amplifiers. Diode detectors and mixers.

Aerials and Propagation : Antenna theory, various types of antenna for medium wave, short wave, VHF and UHF frequencies , propagation at microwave frequencies, atmospheric attentnation, effects of precipitation, reflection, Refraction and Diffraction phenomenon, clutter signals.

Electronic Navigation : Maps and Charts, classification of various navigation systems, celestial and radio navigation, Radio direction finding at medium, high and very high frequencies. The radio compass and Automatic Direction finders. Hyperbolic navigation systems, Loran and Decca. TACAN. Aids to approach and landing, the standard ILS, various categories of ILS accuracy, MLS, Ground Control Approach Systems. Dead reckoning navigation systems, Doppler navigational and inertial navigation, Global Positioning System (GPS), Traffic Alert and Collision Avoidance System (TCAS).

Special Systems : Analogue and Digital computers for aeronautical application, Head up displays.

LS7: MAINTENANCE OF RADIO & COMMUNICATION SYSTEMS (3)

Basics of the application and identification of electrical cables used in Aircraft radio installation, crimping and soldering techniques, bonding continuity and insulation tests.

Composition, performance (stability and tolerance) and limitations of the fixed resistors and varistors (carbon composition, carbon film, wire wound and metallic film).

AC and DC measuring instruments. Electrical power distribution systems, the operation and construction of static inverters, rotary inverters and transformer rectifier units.

Basics of interference caused by electrical and ignition system to radio apparatus, methods of minimizing or suppressing such interference, bonding and screening.
Construction and Identification of various types of antennas; the voltage and current distribution along antenna of various length; characteristics of ground planes.
Very high frequency (VHF) and high frequency (HF) airborne communications; frequency bands allocation; the methods of propagation and the ranges expected, both day and night; calculation of approximate range of communication (line of sight) with given data.
The performance levels expected and specifications of typical airborne HF and VHF communication systems; the principle of operation, installation practices and procedures, functioning of the operating controls and indications and maintenance of typical HF and VHF communication transceivers.

Theory of operation, performance level and specifications of an Audio Integration System.

Working principles and testing of Lead Acid and Nickel Cadmium and Silver Zinc batteries Principles, Characteristics and operation of the undermentioned systems
: Automatic Direction Finder (ADF) Systems,
: Very High Frequency (VHF) Omn, Directional Range System.
: Instrument Landing Systems,
: Weather Radar Systems.
: Microwave Devices.
: Air Traffic Control (ATC) Transponder System.
: Omega Navigation System.
: Radio Altimeter Systems
: Cockpit Voice Recorder.
: Distance Measuring Equipment
: Doppler Navigation System.
: Microwave Landing System
: GPWS
: Emergency Locator Transmitters.
: Computers
: Simulators.
: Flight Control Systems.
Basics of state-of-the-art communication and navigation systems. Principles of Satellite Communications and its application to aircraft.

LS8: AIRCRAFT INSTRUMENTS (3)

Units and Standards, theory of measurement, functional analysis of measurements, errors and error estimation. Measurement of voltage and current in DC and AC, VTVM digital voltmeter, measurement of power, phase angle, power factor. Extension of range by instrument transformers, fluxmeter, measurement of frequency, heterodyne techniques and digital frequency counters, signal generators.

Measurement of circuit elements, LCR direct and bridge methods. Waveform analysis, Cathode ray oscilloscopes, measurement of harmonic and Intermodulation distortion, distortion analyser, spectrum lanalyser.

Generalised configurations and performance characteristics of instruments, motion requirement, relative displacement and velocity. Translational and sesmic displacement, velocity and acceleration measurements. Torque measurement and rotating shaft, pressure and flow measurements. Fuel gauging systems, temperature based on expansion, electric resistance and radiation methods, Problems involved in temperature measurements, compensation techniques, magnetic compasses.

Electrostatic Sensitive Devices, Electromagnetic Environment Requirements for airborne equipment, sensors for the measurement of position, altitude, air speed, acceleration, temperature, fuel flow and quantity. Instrument displays, panels and cockpit layout, flight instruments, gyroscopic instruments, power plant instruments, navigation instruments miscellaneous instruments RLG's.

Moving map displays, multifunction displays, head-up displays, glass cockpit. Cockpit lighting, panels: integral, glopanels.

Typical Electronic/ Digital Aircraft Systems
: ECAM (Electronic Centralised Aircraft Monitoring)
: EFIS (Electronic Flight Instrument Systems)
: EICAS (Engine Indicating & Crew Alerting Systems)
: FMS (Flight Management Systems)

PS1: AIRWORTHINESS AND AIR REGULATIONS (3)

Introduction to aircraft rules as far as they relate to airworthiness and safety of aircraft. Airworthiness requirements for civil and military aircraft CAA, FAA, JAR and ICAO, regulations, Defence standards. Military standards and specifications.

Privileges and responsibilities of various categories of AME license and approved persons. Knowledge of mandatory documents like certificate of Registration, certificate of Airworthiness - conditions of issue and validity. Export certificate of Airworthiness. Knowledge of Log Book, Journey Log Book, Technical Log Book, etc.

Procedure for development and test flights and certification. Certificate of Flight release, Certificate of Maintenance, Approved Certificates.

Technical Publications, Aircraft Manual, Flight Manual, Aircraft Schedules.

Registration Procedure, Certification, Identification and Marking of Aircraft.

Modifications, concessions, airworthiness directives, service bulletins. Crew training and their licenses, approved inspection, approved materials, identification of approved materials. Bonded and quarantine stores. Storage of various aeronautical products like rubber goods, various fluids.

Accident investigation procedures.

PS2: AIRCRAFT MATERIALS (3)

Engineering Materials, Structural properties of materials, Atomic and lattice structure, Bonding in Solids, Imperfections in crystals, Solid phase and phase diagrams, mechanical properties and testing, Isotropy, Orthotropy, True stress and strain, Strength and elasticity, Stiffness, Resistance,

Plasticity, Ductility, Toughness and Hardness of materials. Concept of Fatigue and Creep. Mechanical Testing. Factors Affecting Strength. Deformation, Plasticity and Viscoelasticity, Fracture. Heat treatment, Chemical, thermal and Technological Properties, Board classification of aircraft materials. Ferrous materials, nonferrous materials and alloys, ceramic materials and fibre reinforced composite materials, polymers, metal matrix particulate.

Furnishing Materials : Plastic, wood, plywood, glue, dopes and rubber used in aircraft manufacture. Methods of testing and storage. Paints, surface finishes and materials.

Specifications: Indian Standard, British, American, French, German, and International specifications.

Corrosion, its detection and prevention. Protective finishes. Testing: Destructive and non - destructive testing techniques. Crack detection, inspection of parts by hot oil and chalk, dye-penetrant, fluorescent and magnetic particles, X-ray, ultrasonic, eddy current and acoustic emission methods.

PS4: AIRCRAFT PRODUCTION (3)

Introduction : Function of process planning (Methods). Organizing for process planning - place in production planning and control. Relationship with other departments. Tool engineering.

Heat Treatment : Final and intermediary heat treatment operations carried out on aircraft materials (both ferrous and non-ferrous) and the equipment used, the importance of test pieces. Finishing by anodizing.
General activities carried out in manufacturing and assembly shops, machine shop, sheet metal shop, welding shop, plastic shop and assembly shop.

Process Shop : Theory of planting, finishing processes carried on aircraft materials -planting and finishing equipment.

Jigs and Fixtures : Importance of special production tools used in manufacturing activity of various types of jigs and fixtures used in aircraft industry. Difference between jigs and fixtures. Design consideration. Choice of materials. Types of assembly fixtures such as table box, picture-frame, next and so on. Typical jigs for wings, fuselage and control surfaces, jigs and fixtures for turning, milling and drilling. Universal tooling.

Cutting Tools : Theory of metal cutting. Typical types of cutting tools used in the manufacturing shops, the advantages, of tipped tools. Ceramic tools, tool life, optimum cutting speeds and feeds, factors limiting speeds, feeds and cuts. New development in cutting tools, use of DBN Diamond, ceramics and coating on cutting tools

Inspection Gauges and Equipment : Various inspection gauges in the manufacturing shops and their application. Fits. limits and tolerances, engineering reference systems, station and datum lines, chord and fuselage reference lines, lofting aerofoils, use of templates, test equipment used in aircraft production, necessity for and importance of interchangeability media, application of inter-change-ability media viz., acceptance gauges, reference gauges, aperture gauges. Use of digital read out on measuring tools.

Process Planning : Definition of mass and batch production, various types of charting techniques viz., operation process chart, flow process chart etc., definition of planning breakdown and its importance, factors to be considered for process planning, comparison of methods, simple exercise on process planning - simple machine shop and sheet metal components. Different approaches in process planning during pre-production and production phases.

PS5:PRODUCTION, PLANNING AND CONTROL (3)

Scope of Production Management : Elements of production the production cycle-Necessity for planning and control-analysis of production planning and control functions. Production planning control as the nerve system of the production unit.

Factors affecting planning, forecasting information necessary for pre-planning. Sources of information. Methods of forecasting, aircraft components requiring overhaul, repair, modifications, premature, failures, Project planning. Estimates of plant, machinery, buildings, manpower, materials, spare parts, time and cost estimates.

Materials, Machines and Processes : Production engineering knowledge necessary for planning, machine tools and processes. Materials including aircraft materials and their processing, Spare parts required for overhaul and maintenance. Ground handling equipment. Testing of components and aircraft after overhaul. Standards for acceptance after overhaul.

Equipment and Tools : Pre-planning required for provision of special tools, jigs, fixtures and test equipment required for overhaul and maintenance. Types and description of major test equipment.

Production Planning : Production

planning function of routing estimating and scheduling-LOB-CPM and PER T. Queing theory, sequencing in jobs, shop scheduling. Assembly line balancing. Charts and graphs.

Production Control : Production control functions of dispatching, progressing and evaluation. Activities of progressing. Shop procedures. Maintenance of critical data statistics of evaluation control charts.

Design of PPC Systems : PPC as a management information. System design parameters. Charting information for systems charts.

ORGANISING FOR PPC : Centralized and decentralized systems. Organizing PPC around information flow-concepts and practices in Indian Airlines and Air India, practices in other countries.

PSM: MAINTENANCE OF POWERPLANT AND SYSTEMS (3)

Piston Engines: Two and four stroke engines. Efficiency, factors affecting engine performance. Knowledge of the function and construction of various parts and accessories of the engine including induction, exhaust and cooling system, engine mounting. Engine fire detection and protection systems.

Propellers : Knowledge of purpose and functioning of parts of constant speed, variable pitch and feathering propellers and associated control system components.

Engine fuel and Oil System : Construction, features of carburettors, engine fuel and oil systems. Characteristics of aviation fuel and oil, common sources of contamination, methods of checking contamination.

Ingition and starting systems : Magnetos and ignition system components, various types of engine starters.

Engine Instruments : Principle of operation. Superchargers-constructional features and principles of operation and function of various types of superchargers and its related component.

Gas Turbine : Principle of operation, general constructional details and function of various type of gas turbine engines such as turbojet, turbo fan and by-pass engine. Theory of gas turbine engines, advantages and disadvantages of each type. Induction, exhaust and cooling systems, anticing of engine, engine mountings, thrust augmentation. Compressor surge and stall, bleed control system. Principles of operation, general constructional details and functions of fuel and oil systems, ignition and starting systems and their components. Engine controls of various types, including Full Authority Digital Electronic Control Engine instruments. Power augmentation devices, thrust reversers and auxiliary power units.

Engine Maintenance : Piston/Gas Turbines: Periodical servicing procedures, engine installation checks, control rigging, ground running checks, priming, bleeding and performance checks. Engine on condition maintenance. Trouble shooting and rectification. Inspection after shock landing. Crack detection. Procedure for long and short terms storage of engine and accessories, engine preservation and depreservation.

PSM2: MAINTENANCE OF AIRFRAME AND SYSTEMS (3)

Airframe Structure : Various types of structures in aiframe construction, tubular, braced monocoque, semimonocoque, etc, longerons, stringers, formers, bulkhead, spars and ribs, honeycomb construction. Airplane controls, ailerons, elevators, rudder, trimming and control tabs, leading and trailing edge flaps, tailplane and fins. Basics of structure and structural components fabricated from metal, glass fibre, vinyl, prespex, composites. Finishing materials, paints, surface finishes and associated materials.

Aircraft systems : Flying controls including power operated controls, hydraulic, pneumatic, landing gear various types, shock struts, nose wheel steering, ice and rain protection, fire detection warning and extinguishing, oxygen, air-conditioning and pressurisation systems, wheels, tyres, brakes, antiskid system. Windows, doors and emergency exists. Reliability and redundancy of systems design.

Inspection : Basic principles of inspection, inspection gauges, and tools. Standard inspection techniques and procedures. Go/No go gauges, gauge calibration and maintenance, limits and tolerance. NDT techniques.

Major and minor damage, damage tolerance. Corrosion and corrosion prevention. Major and minor defects. Defect reporting, rectification and investigation. Rigging of aircraft, symmetry checks. Balancing of control surfaces, Periodical inspections, heavy landing, overweight landing checks, abnormal flight loads. Aircraft weighing, weight schedule, calculation of centre of gravity.
: Electrostatic Sensitive Devices
: Electromagnetic Environment
Typical Electronics/ Digital Aircraft Systems
: Electronic Centralised Aircraft Monitoring (ECAM)
: Electronic Flight Instrument

Systems (EFIS)
: Engine Indicating & Crew Alert Systems (EICAS)
: Fly by Wire (FBW)
: Flight Management Systems (FMS)

PSL: MAINTENANCE OF ELECTRICAL AND INSTRUMENT SYSTEMS (3)

EC Courses Instruments:
Principle of operation of rate of climb and descent indicators and their design requirements. The use of variable leak and theory of equation of constant 'n' of the instrument.

Theoretical basis of airspeed and Mach number measurement. Mathematical derivation of formula for indicated airspeed, Machmeter calibration and maximum safe airspeed indicator, design details of airspeed indicators, Machmeter and safe airspeed indicator Theory of operation of an accelerometer, constructional details, accuracy of measurement.

Measurement of total and static pressure - design of a pressure head, accuracy of measurement of static and pilot pressure for subsonic and supersonic speed.Transmission of the measured pressure to the instruments and effect of errors in pressure measurement to the indicators.

Definition of a gyroscope and the effect of external torques on the gyroscopic system: -
i) Effect of earth's rotation, Gyro wander and gimbal lock, Toppling of a gyroscope.
ii) Monitorted gyroscope and restrained gyroscope.
iii) Design criteria of gyroscopic instruments and their errors.

Construction and Principle of operation of a Bourdon tube. Construction and operation characteristic of diaphragms and bellows under pressure reversals. Theory of magnetism, magnetic moment, magnetic potential, terrestrial magnetism and description and constructional details of direct reading compass :
i) Acceleration error and turning error.
ii) Construction and working of a compass.
iii) Installation and compensation of DR Compass. ES Courses Instruments:
Thevenins theorem as applied to DC Circuits. The unit exponential functioin. Transient response of RC circuits. Decible conversion, converting ammeter to voltmeter. Input resistance of a voltmeter and voltmeter loading error. Construction of an ohm meter and volt ohm millimeter.

Construction and operation of Deflection type instruments Permanent magnet moving coil types: Moving iron type electrodynamic type - induction and electrostatic type.

Temperature measurement in a fluid in motion : Construction and working principle of
i) Electrical transmitting\ thermometers.
ii) Resistance thermometers.
iii) Thermoelectric thermometers and their cold junction compensation by bimetallic and resistance element. Working principle of electric tachometer and synchroscope. The theory and working principle of the following remote indicating systems : Desyn, autosyn, selsyn and magnesyn.

Theory and construction of electromechanical fluid flow indicators - positive displacement type and inferential type.

Measurement of fuel contents - Theory and working principle of ' Pacitron' systems developed by Honeywell and Smith.

OS1:PRINCIPLES OF HELICOPTER ENGINEERING

Introduction : Helicopter as an aircraft, Basic features, Layout, Generation of lift, Main rotor, Gearbox, tail rotor, power plant, drive to main and tail rotor, considerations on blade, flapping and feathering, Rotor controls various types of rotor, Geometry of the rotor,
Blade loading, Effect of solidity, profile drag, compressibility etc., Blade area required, number of Blades, Blade form, Power losses, Rotor efficiency.

Aerodynamics of Rotor Blade : Aerofoil characteristics in forward flight, Hovering and Vortex ring state, Blade stall, maximum lift of the helicopter calculation of Induced Power, High speed limitations; parasite drag, power loading, ground effect.

Power Units and Flight Performance : Piston engines, Gas turbines, Ramjet principle, Comparative performance, Horsepower required, Range and Endurance, Rate of Climb, Best Climbing speed, Ceiling in vertical climb, Autorotation.

Dynamic Stability and Control : Physical description of effects of disturbances, Longitudinal dynamic stability, stick fixed dynamic stability, longitudinal stability characteristics, lateral dynamic stability, lateral stability characteristics, control response. Differences between stability and control of airplane and helicopter. Rotor Vibrations: Dynamic model of the rotor, Motion of the rigid blades, flapping motion, lagging motion, feathering motion, Properties of vibrating system, phenomenon of vibration, fuselage response, vibration

absorbers, Measurement of vibration in flight.
Rotor Blade Design: General considerations, Airfoil selection, Blade construction, Materials, Factors affecting weight and cost, Design conditions, Stress analysis.

OS2: GAS DYNAMICS

Normal Shock Waves : Equation of motion for a normal shock, normal shock relations for a perfect gas, stagnation conditions, Rankine-Hugoniot relations Propagating shock waves, weak shock, Reflected shock wave, centered expansion waves, shock tube.

Oblique Shock Waves : Introduction, oblique shock relations, relation between shock angle and turning angle, use of oblique shock chart, Supersonic flow over a wedge, weak oblique shocks, Supersonic compression, Detached shock.

Expansion Waves : Supersonic expansion by turning, Prandtl-Meyer flow. Simple and non-simple regions. Reflection and interaction of shocks and expansion waves, Mach reflection, method of characteristics.

Airfoils in Compressible Flow : Introduction: Linearized compressible flow, Airfoils in subsonic flow, Prandtl-Glauert transformation, critical Mach number, supercritical flow, Airfoils in Transonic flow, Governing equation, Shock wave-boundary layer interaction, stability and control problems.

Lift and drag in supersonic flow : Shock expansion theory, Flow field in supersonic flow. Thin airfoil theory, Analytical determination of lift, drag coefficients on flat plate, bi-convex, diamond -shaped profiles in supersonic flow. supersonic flow past wings.

Potential equation for compressible flows : Introduction, Crocco's theorem, derivation of basic potential equation for compressible flow, linearization of potential equation & boundary conditions. Small perturbation theory, application to wavy wall and bodies of revolution.

Measurements in compressible flows; Instruments used in compressible flow; Rayleigh - Pitot-formula, Subsonic, transonic and supersonic wind tunnels- Design and operation of supersonic wind tunnel. Flow visualization by interferometer, schlieren and shadow graph methods. Instrumentation for Hypersonic wind and shock tunnels, Aeroballistic range, Terminal ballistic range. Rocket-sled facility.

OS3:WIND TUNNEL TESTING

Aerodynamic testing facilities for different speed regimes, low speed wind tunnels, main features of supersonic, transonic and hypersonic tunnels, shock tunnels, closed and open circuit tunnels.

Design of contraction and diffuser and other components. Instrumentation and calibration of test section.

Testing procedure, data reduction, blockage effects and boundary layer corrections, correction to lift drag, moment coefficient due to wind tunnel wall interference.

Measuring devices, pitot static tube, yaw probes, five hole probe, hot wire anemometers, scanivalve system; Flow visualization techniques oil flow, tuft survey and smoke.

Flow field pressure measurements, Schlieren, shadowgraph and interferometer technique, laser Doppler anemometer; Wind tunnel balances, mechanical and strain gauge balances and their design. Scale effects. Non - aeronautical use of wind tunnels.

OS4: VIBRATION AND AERO ELASTICITY

Rectilinear Motion of a Particle : Differential equation of motion in a resisting medium. Free vibrations with viscous damping. Forced vibration with harmonic disturbing force and general disturbing force. Plane harmonic motion. Motion of a projectile with and without damping. Motion of a particle subjected to a central force, planetary motion.

Dynamics of System of Particles: Principle of linear momentum and angular momentum. Rectilinear motion of a variable mass, Rockets. Kinetic energy and work. Law of conservation of energy.

Dynamics of a System with Constraints : Equations of constraints. Generalized coordinates. Generalized forces, Equations of equilibrium in generalized coordinates. Application of generalized coordinates in bending of beams. D'Alembert's principle. Lagrange's equation and applications. Hamilton's principle and applications.

Small Oscillations of Conservative Systems : Free vibrations of conservative systems. Linear oscillations of two coupled masses. Free vibration of systems with two degrees of freedom and systems with several degrees of freedom. Principal modes and their orthogonal property. Normal modes, static coupling and dynamic coupling. Approximate methods of calculating principal frequencies.

Dynamics of Elastic Bodies : Vibration of a string under tension. Free vibration of beams with various end condition and the

determination of the various modes of vibration and their natural frequencies. Vibration of beams with concentrated masses. Critical speed of a rotating shaft. Forced vibration of beams. Torsional vibration of a shaft and disc-shaft combination. Approximate methods of calculating natural frequencies.

Aeroelasticity : Elements of aeroelasticity. General nature of aeroelastic problems. Nature of static aeroelastic phenomenon. Wing divergence and control system reversal for an idealized two dimensional wing and approximate solution for a finite wing. Flutter phenomena and flutter analysis. Difference between flutter instability and resonance. Simplified expressions for aerodynamic forces and moments for an oscillating airfoil. Determination of flutter speed and frequency for an idealized two dimensional wing as well as for a finite wing. Methods of flutter control and prevention. Elementary theory of buffeting.

OS5: CAD-CAM

CAD : History and development of computer aided design, hardware and software. Principle of modelling, drafting and their differences. Basic geometric entities and their representation in the data base. Manipulation of geometric entities. Verification and analysis of geometric entities. Different types of modelling, wireframe, surface and solid modelling.

Merits and demerits of different types of modelling. Display, shading and filing in modelling. Geometry data transfer between different CAD systems - use of translators.
Review of existing CAD systems. Application areas and their relevance to Industrial needs. CAD interface to finite element analysis, computational fluid dynamics etc.

CAM : Concepts of NC, classification of NC Systems, CNC systems concepts and working principles, types of interpolators. Axis drives and classification of control systems, NC/CNC programming: manual, computer assisted and integrated CAD/CAM techniques. Mode and structure of NC programmes. Local and machine co-ordinate system. Codification of NC programs and tape preparation systems. Two axis, three axis and multiaxis programming for different applications.

Linear, circular and helical interpolations, co-ordinate/axis translations, rotations, axis symmetry, mirror imaging, work offsets, tool length, diameter and tool nose radius compensation. Tools and tooling for CNC, vacuum fixturing and modular tooling. Net working and distributed numerical control. Customized post processors and generic post processors. Quality control methodologies and advanced inspection techniques. CNC practices and general safety measures.

CIM : computer integrated manufacturing concepts.

OS6: INDUSTRIAL ENGINEERING

Industrial Economics : Economics and society-wealth, capital and income-profit, theory and surplus value. Demand and supply, law of diminishing returns. Monopolies, Trust, Cartels and Managing Agencies-Markets and Stock Exchange. Monetary and Fiscal systems, Joint stock companies-stock exchange. The company's act. Mixed economy-public and private sectors. Companies, corporations and departmental organizations. Five year plans.

Economic Analysis : Feasibility studies - systems of returns. Allowance for errors and estimates. Decision making. Uncertianity. Breakeven and minimum cost analysis. Replacement problems. Utilization of personnel, depreciation and taxation.

Cost accounting and Control : Cost Accounting - Capital and Revenue expenditure. Direct and indirect costs. Factory overheads. Evaluation of cost accounting, data pricing, budgets and balance sheet. Standard costing, pricing and saleability depending on market. Evaluation of operations like loading of equipment, utilization, economic order quantities, economic batch quantities and other factory operations.

Production Cycle : Generation of demands by consumers. Market Research, Product Development. Activities of research and development. Production Management Functions. Materials and quality control.

Personnel Management : Personnel Management Staff and line responsibilities. Selection and Induction. Promotion, termination and retirement. Working conditions, health and welfare. Discipline. Grievance procedures. Responsibilities in the line management. Maintenance of good employee relation.

OS7: TOOL DESIGN AND FABRICATION

Tooling Materials : Selection of material, properties, testing, heat treatment and application.

Jigs and Fixtures : General design consideration, types of jigs, construction methods, bushing types and application, types of fixtures and their

technological construction methods. Assembly jigs, Sub assembly jigs, etc.

Sheet Metal Tooling : Shearing, bending, forming, drawing dies, progressive, compound and combination dies, multiform tools, rubber dies, stretch form tools and spinning tools.

CNC Tooling : Materials, design consideration, construction of tools and application

Cutting Tools : Fundamentals of Cutting Tool design, design of single point cutting tools, multiple point cutting tools design of form cutters. Tool life, wear etc.

Gauges : Design of plain, taper and thread gauges for bolts internal and external features, functional gauges.

Moulds and Dies : Basic concepts on plastic moulds, die casting dies, forging dies, design and application.

Metrology : Measuring instruments like vernier, screw gauges, slip gauges, height gauges, comparators, CMM, optical tooling for jig setting, principles and application.

CAD/CAM : CAD/CAM and its application in tool design and manufacture.

OS8: STATISTICS AND QUALITY CONTROL

Quality Control : Definitions of quality, quality control and inspection, difference between quality control and inspection. Drawbacks of inspection. Concept of total quality control, quality characteristic, variables and attributes.

Collection and organizing data. Histograms, measurement of variability. Frequency distribution, normal or Gaussion distribution relative frequency, change and assignable causes, meaning of state statistical control measures of location and dispersions.

Control charts for individual measurements, average and range interpretation of control charts, calculation of control limits, standard deviation.
Test of significance of means. Regression analysis. Definition of process capability, specification, inter -relationship of tolerance, fits and clearances, chance errors of measurement, procedures for studying process capability of machines and processes.

Theory of probability, characteristics of binomial and Poisson distribution. Control charts for fraction defectives, number of defectives, defects per unit, interpretation of control charts. Acceptance sampling. OC Curves, published sampling plans, acceptance sampling by attributes AQL, AOQL and LTPD CONCEPTS, concepts.

Use of control charts like cumulative sum charts, master control system and special purpose charts, control by gauging. Design of experiment, factorial experiments. Quality costs, failure costs, appraisal costs and prevention costs.

Managing programme of reliability, life testing maintainability. Total quality control: Organizing for quality control of incoming material, control of process, evaluation of product and quality audit. Quality control organization: Manpower requirements, Solutions, testing and training.

Improving quality mindedness: Seminar, appraisal talks, inplant training, exhibitions, posters, vendor relations. Vendor quality rating. Selection of vendors. Establishing of Vendor Quality Standards. Exchange of information. Inspection of vendor material, technical assistance to vendor.

Managing, inspection and test. Acceptance in general inspection planning, Selection of inspection stations, interpretation of specifications, Classification of defects. Quality control manual. Inspection of component finishing processes.

Measurements : Conflict in measurements, maintaining accuracy of instruments, design of measuring equipment, accuracy of inspection. Non Destructive Tests for both metallic and non metallic material by radiography ultrasonic methods, magnetic particle inspection eddy current, dye penetrant and visual inspection, acoustic emission etc. Defect investigation and analysis.

Metrology : Knowledge of instruments and devices of accurate physical dimensional checks covering linear measurements, intricate geometric shapes, contours and profiles. Internal and external diameters of screwthreads etc and gear testing. Measuring surface roughness, flatness and clearance between mating surfaces.

OS9: AIR NAVIGATION

The Problems of Air Navigation : The Aircraft, Aids of Navigation VOR, ADF, ILS, MLS,GCA, DME, TACAN. Doppler and basics of inertial navigation inertial reference system, Their limitations and uses. Weather, Air Traffic Control, Communications, GPS, TACAS, ATC Interrogation Radar.

The Earth: Its Form & Features : Principle Physical Features of the Earth, Latitude, Sidereal Time. The Seasons, Climate, Duration of daylight,

Chart Projection for Air Navigation : The Round Earth on a Flat Chart. Properties obtainable in Projection. Distance on Sphere. Direction on a Sphere. The Lambert Projection. The Mcrcator Projection, The Gnomonic Projection. The Stereographic Projection. Projections for Weather Charts. Calculation on Rhumb Line Tracks and distances.

Magnetism : Review of the Elementary laws of magnetism. Terrestrial magnetism, Horizontal and vertical components of earth's magnetic field and their variation with latitude. Isogonic and agonic lines. Isoclinic lines. Aircraft Magnetism; Resolution into P,Q and R components, coefficients and deviation associated with them, compass course deviation.

Instruments : Units of measurement of distances and height. The function of navigational Instruments. The Speed Indicator. The Rate of Climb indicator. The and RMI.

Chart Reading : Distinctive Properties of Charts. The importance of chart reading. Topographic Information. Aeronautical Data. Legend and written Notes. The practice of Chart Reading.

Dead Reckoning : The place of Pilotage. Advantage of Dead Reckoning. Basic Problems in Dead Reckoning.Special Problems & Dead Reckoning: Climb and Descent. Off-course corrections. Double Drift. Radius of Action. Cruise Control. Alternate Airport Problem. Interception. Tracking Equal time point, point of safe return.

Air Navigation Computers : Function and Usefulness. The Slide Rule Side. The Wind Triangle Side.

Radio Navigation : Principles of radio transmission and reception; properties of electromagnetic waves; classification of frequency bands, elementary knowledge of Radar. An elementary knowledge of principles of the following radio and radar aids and systems:

Airborne D/F : The manual loop and automatic radio compass including methods of Calibration.

Ground D/F : M.F., H.F. and V.H.F. Systems. Radio/Radar track guides approach and landing aids and systems including V.O.R., N.D.B., I.L.S. and M.L.S. Plotting Radio Bearings on Mercator Charts and Lambert Chart. Relating Bearings.

Celestial Navigation : Elements of Astronomy; the universe; Solar system, movements of earth, moon and planets, earth's orbit; Kepler laws, declination, altitude, azimuth etc. Practical Value. Accuracy. Simplicity. Basic principles. The Line of position. Celestial Coordinates. Determining the Greenwich Hour Angle (GHA) Determining the Local Hour Angle (LHA). A Line of position from Polaris. A Line of Position from an Unidentified Star. Radio Time Signals. Identification of Stars. Star Names. Brightness of Star. The planets. Motion of the Stars and Planets. The Practice of Celestial Navigation. Astro-Navigation instruments.

The Practice of Navigation : Details of Navigation. Preparation of Charts for use in Flight Pilotage. Contact Instrument Flying. Future Air Navigation system(FANS), Cruise controls, Flight planning using charts and tables, Extended Range Operations, Aircraft Performance.

Pressure Pattern Flying.

OS10: AIRCRAFT EVALUATION

Aerodynamics & Performance : International Standard Atmosphere and its significance pressure and density altitudes, Compressibility effect, Mach number and its variation with altitude and temperature.

Take-off and landing, single engine performance at altitude, climb and descent performance at altitude. Effect of horizontal speed during climb and descent on performance and economics. Cruise performance cruise at constant speed (or Mach No). Constant altitude, constant angle of attack and their effect on block speed and economics. Noise regulatory requirements.

Aircraft Equipment : Cockpit layout and instrumentation, automatic landing system, Air Data Computer, ICAO landing categories, communication and navigation equipment and their functions in general, Flight Recorder and Cockpit Voice Recorder and related intercom; music reproducer etc. Emergency facilities/equipment and related regulation, weather radar and its uses. Environmental control, air conditioning and pressurization, their significance and necessity.

Service Support Equipment : Airframe spares-insurance parts and consumable. Spare engine and the criteria for their proportion to installed engines-engine spares their relation to fleet size and utilization. Accessories-Rotables and consumable items. Ground support equipment.

Aircraft Scheduling : Factors affecting airlines schedules-Commercial operation, Technical Meteorological, Aircraft Facilitation-run-way strength and related requirements, Load Classification. Criteria for runaway and aircraft. Air Traffic Control and other number and other ground communication/navigation facilities-their relationship and effect on related aircraft equipment.

Airport emergency Facilities-fire fighting, First aid etc.

Aircraft Maintainability : Evolution of maintenance philosophy, periodic maintenance system based on checks at specific intervals and continuous maintenance system. Daily Inspection and trip inspection system. ON CONDITION maintenance techniques, their evolution and effect on design of aircraft systems.

Accessibility, repairability, interchangeability, Structural inspection programme and sampling criteria, system redundancy, back up, Despatch reliability and goals, T.B.O. and M.T/B/F/ concepts and criteria. Determination of labour requirements for maintenance and over-haul, Component removal and replacement criteria on overhaul costs. Engine life development techniques and effect on overhaul costs.

Operating Cost : Direct operating cost Depreciation of airframes and engine, insurance (Hull Insurance, passenger liability their party liability etc.). Housing and parking charges. Indirect operating cost-their breakdown and criteria for estimation of payload. Range and Block speed. Characteristics of aircraft and their effect on operating cost.

Unit operation costs : Cost per tonne kilometer and cost per seat kilometer-Break-even load factor both in terms of passengers as well as total available payload.

Other Costs: Introductory Costs, (Crew training, technical personnel training, ferry flights. Additional building and workshop facilities costs, route proving etc.). Financing charges, aircraft suitability for Traffic and Route system. Life cycle cost.

OS11: ROCKETS AND MISSILES

General Introduction : Difference between Rockets and Missiles, Types of Rockets and Missiles, Satellite launch vehicles. Manned Rockets.

Aerodynamics Characteristics of Air Frame Components: Introduction, Bodies of revolution. Different forebody shapes. Summary of characteristics of bodies of revolution, Base pressure. Aerodynamic controls. Jet control.

Performance of Missiles and Rockets: Introduction, various types of drags. Boost glide trajectory, Graphical solution, Boost sustainer trajectory, long range cruise trajectory, long range Ballistic trajectory. Powered and unpowered flight. Brief description of Fin stabilized and spin stabilized rockets and their force systems. Thrust misalignment.

Stability and Control Longitudinal : Two degrees of freedom analysis, complete missile aerodynamics with forward and rear control, Static stability margin

Directional : Introduction, cruciform configuration, Body, Wind and Tail contribution on directional control.

Lateral : Induced Roll, Interal control and design consideration for cruciform and monowing; Damping in Roll.

Manoeuvring Flight: Introduction, Flat turns for crucifor m and monowing. Pull upsRelationship of manoeuvrability and static stability margin.

Dynamic Stability : Equations of motion, longitudinal and lateral dynamics.

Miscellaneous : Launching problems. Re-entry and Recovery of Space Vehicles, Modern Concepts, Manned Missions.

OS12: INTRODUCTION TO THE FINITE ELEMENT METHODS

Introduction to differential equations and numerical methods for solution of differential equations; finite difference, collocation, weighted residual methods.

Introduction to a second order ordinary differential equation, e.g. stretching of a bar under axial loads or the one-dimensional steady-state heat conduction problem, introduction to the principle of virtual work, weak formulation for differential equation, definition of energy-norm, admissible functions for approximation. Introduction to the finite element method for given weak form, essential and natural boundary conditions, construction of basis and shape functions (Lagrangian shape functions), definition of stiffness matrix and load vector, mapping to the master domain, numerical integration, element stiffness matrix and load vector, assembly, charactseristics of the matrix problem, choice of solvers for the matrix problem (skyline, banded or frontal), development of a working one dimensional finite element code.

Convergence characteristics of solution, a-priori error estimates, characteristics of finite element strains and stresses (Flux); postprocessing of finite element solution for recovery of "better" stresses (nodal averaging or extrapolation from Gauss points). Introduction to Euler -Bernoulli beam theory, weak formulation, smoothness requirements and Hermite shape functions, solution of problem, quality of computed quantities (e.g. displacement, shear force, bending moment), introduction to Timoshenko beam theory, shear locking, shear correction factor, reduced integration.

Steady-state heat conduction problem in two-dimensions, weak formulation, boundary conditions, mesh generation, triangular or quadrilateral elements, connectivity information, linear mapping construction of shape functions (e.g. for triangles, tensor product or serendipity for quadrilaterals), numerical integration; element stiffness matrix, element load vector, assembly, imposition of essential boundary conditions; solution, convergence characteristics of finite element solution, postprocessing of finite element fluxes.

Subparametric, isoparametric and superparametric mappings, transformation from master to physical element; Jacobian calculation.

Introduction to plane stress and plane strain problems. Weak formulation. Essential and natural boundary conditions, construction of element stiffness matrix and load vector, solution of problem, quality of finite element stresses, post processing for better stressess.

Development of a two-dimensional finite element code for the plane stress/strain problems.

Introduction to plate theory; Kirchhoff plate theory, weak formulation; Hermite shape functions in two-dimensions, Rcissner-Mindlin plate theory, higher order plate theories.

OS13: COMPUTATIONAL FLUID DYNAMICS (CFD)

Equations of Fluid Dynamics and their classification. Boundary conditions.

Finite difference schemes : Projection and truncation error, Stability, consistency, accuracy and convergence of numerical schemes. Time marching methods. FDM applied to linear advection - diffusion equation, MacCormack scheme and its application to Euler and N-S equations.

Basics of Finite Volume Method : Equations in integral form, numerical flux at cell faces,upwind methods, flux - vector splitting, flux-difference splitting, shock capturing methods.

Basics of Finite Element Method : Isoparametric elements, bilinear and tri-linear elements. Numerical Integration, space function, Petrov-Galerkin method.

Computation of turbulent flows; RANS, turbulence modelling.
Grid generation: algebraic and pde based methods, O-, C-, H-type topologies, unstructured meshes, hybrid meshes.

Large scale problems in CFD, iterative solvers, preconditioning techniques, vector and parallel computing, post- processing for visualisation.

OS14:OPTIMIZATION METHODS IN ENGINEERIN GDESIGN

Introduction optimum design, automated design, Reliability based design.

Linear programming : Introduction, linear programming problem solution procedure, simple algorithm sensitivity analysis.

Non-linear programming : Role of convexity in nonlinear programming, Kuhn-Trucker condition, linearization technique, single variable search simultaneous, search procedures, sequential search procedures, Dichtomous search. Fibonacci search, Golden search, Interval Bisections search, interpolation procedures.

Multivariable search : simplex method, pattern search methods, Descent methods, conjugate direction, steepest descent method, gradient and variable metric method.

Unconstrained and constrained minimization techniques.

Integer and geometric programming, Genetic algorithm, simulated annealing.
Multi-objective optimization, robust design techniques.
Application to engineering design problems, comparison with other techniques.

OS15: NONDESTRUCTIVE EVALUATION

This course is intended to introduce the methods of NDT and highlight its role in quality assurance. The emphasis should also be on its application during the process of design, manufacturing and maintenance.

Importance of NDT in quality assurance. Different types of non destructive techniques to obtain information regarding size, location and orientation of damage or cracks. Visual inspection techniques coin tapping technique for composite structures and adhesive bonds.

Ultrasonic testing : Pulse echo technique, pitch-catch technique, through transmission technique, A-scan, B-Scan, C-scan.

Acoustic emission: Sources of acoustic emission in composites, peak amplitude, rise time during events, ring-down counts duration of events. X-ray radiograhy: Absorption spectra, short wave length, X-ray for detection of voids.

Die penetration technique.

Magnetic particle testing.

In each of the above techniques, (i) theory and basic principles, (ii) advantages/ disadvantages, (ii) material of parts that can be inspected, (iv) physical size and shape limitation, (v) economics of process, (vi) types of defects that can be detected, (vii) environment limitation are to be discussed alongwith equipment used for each of the techniques.

OS16: GROUND HANDLING AND SUPPORT SYSTEMS

General knowledge of ground handling of Aircraft, Aircraft Safety; Mooring, Jacking, Leveling, Hoisting of aircraft, Towing, Mooring of an a/c during adverse conditions. Aircraft cleaning and maintaining.

Ground signaling/marshalling of aircraft in day & night time.

Brief knowledge of airport and its procedures. Control tower, Dipersal areas, Approns, Tarmac, Taxy track, Runway and its ends. Approach and clear zone layout.

Brief knowledge of the signals given by the control tower.

Knowledge of Airfield lighting system, Aircraft Rescue & Fire Fighting.

Maintenance and handling of ground equipments used in maintenance of aircraft. Compressors, Portable hydraulic test stands, Electrical power supply equipment, charging trolley. Air-conditioning and Heating unit, Ground support air start unit. Pressure oil unit, Fire extinguishers, jacks, Hoisting cranes/grantry, Ladders, Platforms, Trestles, Chocks.

Knowledge of safety and fire precautions to be observed during maintenance including refueling, defueling & engine start.

Maintenance of hydraulic accumulators, reservoirs and filters : Maintenance of landing gear (L/G), Shock strut charging and bleeding, Maintenance of L/G brakes i.e., Dragging, Grabbing, Fading, Brakes and excessive brake pedal travel. Maintenance on wheels, tyres and tubes i.e., dismantling, inspection, assembling, inflating, inspection and installation Rigging of flight control surfaces and duplicate inspection; Rigging checks-Angular alignment checks and symmetry checks, Knowledge and use of Tensiometers, Protractors etc.

Storage of Rotables.

OS17: INTRODUCTION TO AUTOMATIC FLIGHT CONTROL SYSTEMS

Introduction : Open loop and Closed Loop (Feed back) control systems. Types of feed back control sytems. Laplace's transform.

Feed Back Control System : Transfer function of linear systems, Impulses response of linear systems, Block diagrams of feed back control systems, multivariable systems, Block diagram algebra.

Analysis of Feed Back Control Systems : Typical test input signals, Time domain performance characteristics of feed back control system. Effects of derivative and integral control. Steady State response of feed back control system-steady State error, Frequency response.

System Stability : Routh - Hurwitz criterion, the root locus method Auto Pilots: Longitudinal Auto-Pilots: Brief description through Block diagrams and Root Locus of Displacement Auto Pilot, Pitch Orientational Control System. Acceleration control system.

Miscellaneous : Fly-By-Wire control system, Instrument Landing System.

OS18: INTRODUCTION TO WIND ENGINEERING:

Introduction : Scope of Wind Engineering. Types of Problems. Elementary Physical Geography. Global Atmospheric Circulation. Geostrophic and Gradient Wind. Cyclones. Thunderstorms. Tornadoes Wind Data. Atmospheric Boundary Layer. Wind Profile. Terrain Categories. Extreme Wind. Gust Factor.

Basic Shape Factor. Vortex Shedding. Separation. Effect of Reynolds Number.

Static Wind Load on Tall buildings. TV Towers and Masts, Chimneys. Cooling Towers. Lattice Towers. Suspension and Cable Stayed Bridges. Stadium Roof/Light Towers.
Dynamic Effects, Single Frequency Excitation. Along-wind and Across wind Vibrations.

Wind Tunnel Testing : Model Laws. Types of Models. Special features of wind tunnels used for wind engineering studies.

OS19: COMPOSITE MATERIALS

Introduction to Composite Materials; Classification of composites, particulate composites, fibrous composites. Use of fiber reinforced composites; Fibers, matrices and manufacture of composites; properties of various type of fibers like glass, Kevlar, Carbon and Graphite, methods of manufacture, surface treatment of fibers, various forms of fibers, matrix materials, polymers: Thermosetting and thermoplastic polymers, properties of polymers like epoxies, phenolics, polyester peek etc.

Manufacture of composites : hand lay up technique, pre-

ssure bag and vacuum bag molding techniques, puftrusion, resin-transfer moulding, injection moulding, Bulk moulding compound, sheet moulding compound.

Behavior of unidirectional composites : volume traction, weight traction, density of composites, Micromechanics approach, longitudinal strength and stiffness, factors affecting longitudinal strength and stiffness, transverse strength and stiffness, sheer modulus and strength, Poisson's ratio, effect of fiber dimension and distribution on strength and stiffness, Halpin-Tsai equations.

Analysis and strength of an orthotropic lamina : strain relations and engineering constants, relation between engineering constants and stiffness coefficients, strength of an orthotropic lamina, failure theories, Analysis of laminated composites, laminate orientation code, stress and strain variation in a laminate, properties of symmetric, cross ply angle-ply and quasi isotropic analysis of laminate after initial failure, hygrothermal behaviour of laminates.

Thermal and moisture expansion coefficients, transport properties, mass diffusion.

Short fiber composites: approximate analysis of stress transfer, average fiber stress, modulus and strength of short fiber composites.

Experimental characterization of composites : uniaxial portion and compression test, inplane shear test, flexural test, determination of intralaminar shear strength and fracture toughness.

Non destructive evaluation techniques : ultrasonic techniques, Acoustic emission techniques, X- ray radiography.

CHE 1101 INTRODUCTION TO CHEMICAL ENGINEERING 1 (2)
Introduces the chemical engineering profession. Discusses the role of an engineer as a problem solver dealing with multiple constraints. Covers process flowsheets, and piping and instrumentation diagrams in Microsoft PowerPoint. (Requirement: Must be enrolled in the chemical engineering program.)

CHE 3260 MATERIALS SCIENCE AND ENGINEERING (3)
Studies the relationships between materials processing, composition and structure, properties and performance. Includes electrical, mechanical and chemical properties of metals, ceramics, polymers, electronic materials and composites, as well as coating and protection materials. Prerequisites: CHM 1101, MTH 1002, PHY 1001.

CHE 3265 MATERIALS LABORATORY (1)
Complements CHE 3260. Illustrates materials processing, measurement and analysis of materials properties. Prerequisites: PHY 2091. Corequisites: CHE 3260.

MAE 2081 APPLIED MECHANICS: STATICS (3)
Includes the elements of statics in co-planar and three-dimensional systems; equilibrium of particles and rigid bodies; simple structures, centroids and center of gravity; beam shear and bending moment; friction; and virtual work. Prerequisites: PHY 1001.

MAE 3083 MECHANICS OF MATERIALS (3)
Stress and strain; mechanical properties of materials; Hooke's law; axial, torsion, pure bending and transverse loading of members; transformations of stress and strain; failure criteria; strain measurements; thin-walled pressure vessels; design for strength; energy methods; design for impact; column buckling and stability. Prerequisites: MAE 2081.

MAE 4281 AEROSPACE STRUCTURAL DESIGN (3)
Bending, shear and torsion of open and closed sections, bending of thin plates, structural instability; stress analysis of aircraft components, introduction to finite element methods, airworthiness and elementary aeroelasticity.

MAE 5050 FINITE ELEMENT FUNDAMENTALS (3)
Includes finite element formulation of a continuum, virtual work and energy principles, one- and two-dimensional problems; Ritz method, weighted residuals; time-dependent problems; isoparametric formulations and recent developments utilizing elementary finite element methods and existing software. Prerequisites: MAE 2082, MAE 3083, MTH 2201.

MAE 5110 CONTINUUM MECHANICS (3).
Mathematical preliminaries, kinematics of motion, equation of conservation mass, equations for the rates of change of translational momentum, rotational momentum, and energy; the entropy inequality; models of material behavior including the linearly viscous fluid and the linearly elastic solid. Prerequisites: MTH 2001, MTH 2201.

MAE 5130 VISCOUS FLOWS (3)
Theory of Navier-Stokes equations; exact solutions for steady and unsteady plane, duct, jet and stagnation point flows; Stokes and Oseen approximations; the Prandtl concept of the boundary layer and similarity solutions Blasius, Hiemenz, Faulkner and Skan, Hartree, etc.; approximate solutions for nonsimilar boundary layers.

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exact solutions for steady and unsteady plane, duct, jet and stagnation point flows; Stokes and Oseen approximations; the Prandtl concept of the boundary layer and

similarity solutions Blasius, Hiemenz, Faulkner and Skan, Hartree, etc.; approximate solutions for nonsimilar boundary layers.

MAE 5140 EXPERIMENTAL FLUID DYNAMICS (3)
Introduces students to test facilities such as wind tunnels and water tanks. Includes measurements of force and pressure distribution on airfoil principles and applications of laser Doppler velocimetry, hot-wire anemometry, flow visualization methods and modern data acquisition systems (LabView). Prerequisites: MAE 5130.

MAE 5150 COMPUTATIONAL FLUID DYNAMICS (3)
Elliptic, parabolic and hyperbolic PDEs; finite-difference formulations; explicit and implicit methods, stability analysis; operator splitting, multistep methods; boundary conditions; grid generation techniques; applications involving Euler boundary layer and full Navier-Stokes equations. (Requirement: Graduate standing and instructor approval.) Prerequisites: MTH 3201 or MTH 3210.

MAE 5160 GAS DYNAMICS (3)
Differential conservation equations; one-dimensional steady flows; unsteady wave motion; small perturbations and linearized flows; bodies of revolution, conical flows, and slender body theory; blunt-body flows; three-dimensional supersonic flows; transonic flows; the method of characteristics and numerical computation for supersonic flows; real gas effects. Prerequisites: MAE 5150.

MAE 5180 TURBULENT FLOWS(3)
General introduction, isotropic, homogeneous and shear-flow turbulence, transport processes in turbulent flows, wall and free turbulent shear flows, atmospheric turbulence. Prerequisites: MAE 5130.

MAE 5310 COMBUSTION FUNDAMENTALS (3)
Includes equilibrium chemical thermodynamics and thermochemistry, chemical kinetics, transport phenomena and conservation equations; Rankine-Hugoniot theory, Chapman-Jouguet waves and detonation and deflagration; diffusion flames and premixed flames; flammability, ignition and quenching. Prerequisites: MAE 3062.

MAE 5320 INTERNAL COMBUSTION ENGINES (3)
Investigates the applications of thermodynamic, fluid dynamic and combustion principles to spark- and compression-ignition engines, and direct-injection stratified charge engines; ideal and actual cycle analyses; exhaust emissions, air pollution and control; engine heat transfer; and engine modeling. Prerequisites: MAE 5310.

MAE 5350 GAS TURBINES (3)
Introduces characteristics, performance analyses and design methodologies for stationary aircraft gas turbines. Topics include gas turbine cycle analyses, component design of combustors, compressors, turbines and nozzles, fluid dynamics and heat transfer, gas turbine fuels and emissions. Prerequisites: MAE 5310.

MAE 5390 SELECTED TOPICS IN COMBUSTION AND PROPULSION(3)
Addresses selected topics reflecting the current research interests of the faculty and visiting scholars. (Requirement: Instructor approval.)

MAE 5410 ELASTICITY (3)
Analyzes stress and strain in two and three dimensions, equilibrium, compatibility and constitutive equations, energy methods, flexure, stretching, torsion and contact stress formulations, axially symmetric problems. (Requirement: Instructor approval or prerequisite course.) Prerequisites: MTH 5201.

MAE 5430 DESIGN OF AEROSPACE STRUCTURES (3)
Applications of mechanics to lightweight structures. Considers designing with monolithic and advanced composite materials; stiffened shell structures; buckling instability; failure analysis; variable section beams subjected to nonuniform loads; and computer formulations used in solving structural problems. Prerequisites: MAE 4281.

MAE 5460 FRACTURE MECHANICS AND FATIGUE OF MATERIALS (3)
Static and dynamic design and maintenance to prevent structural failure; presence of cracks, stress intensity factor, linear elastic and elastic-plastic fracture mechanics, fracture tests, fatigue crack initiation and propagation, environmental and corrosion effects, fatigue life prediction. Prerequisites: CHE 3260, CHE 3265, MAE 3083.

MAE 5470 PRINCIPLES OF COMPOSITE MATERIALS (3)
Particulate and fiber composites; forms, properties and processing of constituent materials; manufacture of composites, interaction of constituents, micro- and macromechanics and design of composite materials; stress-strain tensors and their transformation; laminate theory of orthotropic materials; strength properties. Prerequisites: CHE 3260, CHE 3265, MAE 3083.

MAE 5480 STRUCTURAL DYNAMICS (3)
Principles of dynamics applied to structural analysis, analysis of continuous media and discretized models, free vibration and forced response of structures, modal analysis, energy methods and approximate methods, applications in structural design and experimentation.

MAE 2081 APPLIED MECHANICS: STATICS (3)
Includes the elements of statics in co-planar and three-dimensional systems; equilibrium of particles and rigid bodies; simple structures, centroids and center of gravity; beam shear and bending moment; friction; and virtual work.
Prerequisites: PHY 1001.

MAE 2082 APPLIED MECHANICS: DYNAMICS (3)
Analyzes kinematics and kinetics of particles, systems of particles, and rigid bodies. Discusses absolute and relative motion approaches. Employs force-mass-acceleration, workenergy and impulse-momentum methods.
Prerequisites: MAE 2081.

MAE 3083 MECHANICS OF MATERIALS (3)
Stress and strain; mechanical properties of materials; Hooke's law; axial, torsion, pure bending and transverse loading of members; transformations of stress and strain; failure criteria; strain measurements; thin-walled pressure vessels; design for strength; energy methods; design for impact; column buckling and stability. Prerequisites: MAE 2081.

MTH 0111 INTERMEDIATE ALGEBRA (3)
Basic operations on real numbers, algebraic expressions, linear equations, inequalities, exponents, polynomials, factoring, rational functions, roots, radicals, quadratic equations and quadratic functions.

MTH 1000 PRECALCULUS (4)
Algebra and trigonometry that are used to develop the skills needed in calculus. Required for students who have minimal algebra and/or trigonometry preparation, or whose placement test indicated such a need. (Requirement: Passing score on placement exam or prerequisite course.) Prerequisites: MTH 0111.

MTH 1001 CALCULUS 1 (4)
Functions and graphs, limits and continuity, derivatives of algebraic and trigonometric functions, chain rule; applications to maxima and minima, and to related rates. Exponential logarithmic, circular and hyperbolic functions: their inverses, derivatives and integrals. (Requirement: High school algebra and trigonometry, and a passing score on the placement test, or prerequisite course.) Prerequisites: MTH 1000.

MTH 1002 CALCULUS 2 (4)
Integration and applications of integration, further techniques of integration, improper integrals, limits, l'Hospital's rule, sequences and series, numerical methods, polar coordinates and introductory differential equations. Prerequisites: MTH 1001.

MTH 2201 DIFFERENTIAL EQUATIONS/LINEAR ALGEBRA (4)
First-order differential equations, linear differential equations with constant coefficients, first-order systems of differential equations with constant coefficients, numerical methods, Laplace transforms, series solutions, algebraic systems of equations, matrices, determinants, vector spaces, eigenvalues and eigenvectors.
Prerequisites: MTH 1002.

MTH 3210 INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS AND APPLICATIONS (3)
Includes heat, wave and Laplace equations, initial and boundary value problems of mathematical physics and Fourier series. Also covers Dirichlet problem and potential theory, Dalambert's solutions for wave equation, Fourier and Laplace transforms, and Poisson integral formula. Also includes PDEs in higher dimensions and special functions of mathematical physics.
Prerequisites: MTH 2001, MTH 2201.

MTH 5201 MATHEMATICAL METHODS IN SCIENCE AND ENGINEERING 1 (3)
Fourier series and their convergence properties; Sturm-Liouville eigenfunction expansion theory; Bessel and Legendre functions; solution of heat, wave and Laplace equations by separation of variables in Cartesian coordinates.
Prerequisites: MTH 2001, MTH 2201.

PHY 1001 PHYSICS 1 (4)
Includes vectors; mechanics of particles; Newton's laws of motion; work, energy and power; impulse and momentum; conservation laws; mechanics of rigid bodies, rotation, equilibrium; fluids, heat and thermodynamics; and periodic motion.
Prerequisites: MTH 1001, MTH 1002.
Corequisites: MTH 1002.

PHY 1999 PHYSICAL CONCEPTS FOR CONSTRUCTION (4)
Presents the basic concepts of physics as an essential foundation for understanding technical ideas such as statics, structures, materials, and electrical and mechanical systems. Provides a basis in physical science required for field work in the construction industry.
Prerequisites: MTH 1001.

PHY 2091 PHYSICS LABORATORY 1 (1)
Experiments to elucidate concepts and relationships presented in PHY 1001, to develop understanding of the inductive approach and the significance of a physical measurement, and to provide some practice in experimental techniques and methods.
Corequisites: PHY 1001 or PHY 1999.

AME 100 ELECTRICALl FUNDAMENTALS (3)
1. Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.
2. Static Electricity and Conduction
Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum.
3. Electrical Terminology
The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.
4. Generation of Electricity
Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.
5. DC Sources of Electricity

Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel ca dmium cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.
6. DC Circuits Ohms Law, Kirch-off's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply.
7. Resistance/Resistor: 7.1 Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattageratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge. 7.2 Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge;
8. Power Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work and energy.
9. Capacitance / Capacitor Operation and function of a capacitor; Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.
10. Magnetism: 10.1 Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor. 10.2 Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.
11. Inductance/Inductor Faraday's Law; Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns; Mutual induction; The effect the rate of change of primary current and mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back emf, self induction; Saturation point; Principle uses of inductors;
12. DC Motor / Generator Theory Basic motor and generator theory; Construction and purpose of components in DC generator; Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter Generator construction.
13. AC Theory Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power Triangular / Square waves; Single / 3 phase principles.
14. Resistive (R), Capacitive (C) and Inductive (L) Circuits Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.
15. Transformers Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.
16. Filters: Operation, application and uses of the following filters: low pass, highpass, band pass, band stop.
17. AC Generators Rotation of loop in a magnetic field and waveform produced; Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses; Permanent Magnet Generators.
18. AC Motors: Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and poly phase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, inductor, shaded or splitpole.

AME 105 ELECTRONIC FUNDAMENTALS (3)
1. Semiconductors: 1.1 Diodes Diode symbols; Diode characteristics and properties; Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes; Functional testing of diodes. 1.2 Transistors Transistor symbols; Component description and orientation; Transistor characteristics and properties.
1.3 Integrated Circuits Description and operation of logic circuits and linear circuits/operational amplifiers.
2. Printed Circuit Boards Description and use of printed circuit boards.
3. Servomechanisms Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers; Principles of operation and use of the following synchro system components / features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.

AME 110 DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS (3)
1. Electronic Instrument Systems Typical systems arrangements and cockpit layout of electronic instrument systems.
2. Numbering Systems Numbering systems: binary, octal and hexadecimal; Demonstration of

conversions between the decimal and binary, octal and hexadecimal systems and vice versa.
3. Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.
4. Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications.
5. Logic Circuits Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.
6. Basic Computer Structure Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems).
7. Fibre Optics: Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.
8. Electronic Displays Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.
9. Electrostatic Sensitive Devices Special handling of components sensitive toelectrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.
10. Software Management Control Awareness of restrictions, airworthinessrequirements and possible catastrophic effects ofunapproved changes to software programmes.
11. Electromagnetic Environment Influence of the following phenomena onmaintenance practices for electronic system: EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning / lightning protection
12. Typical Electronic / Digital Aircraft Systems
General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) testing such as :ACARS-ARINC Communication and Addressing and Reporting System ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System EICAS-Engine Indication and Crew Alerting System FBW-Fly by Wire FMS-Flight Management System GPS-Global Positioning System IRS-Inertial Reference System TCAS-Traffic Alert Collision Avoidance System.

AME 115 METERIALS AND HARDWARE (6)
1. Aircraft Materials- Ferrous
1.1 Characteristics, properties and identification of common alloy steels usedin aircraft; Heat treatment and application of alloy steels;
1.2 Testing of ferrous materials for hardness, tensile strength, fatigue strengthand impact resistance.
2. Aircraft Materials- Non-Ferrous
2.1 Characteristics, properties and identification of common non-ferrousmaterials used in aircraft; Heat treatment and application of non-ferrous materials; 2.2 Testing of non-ferrous material for hardness, tensile strength, fatiguestrength and impact resistance.
3. Aircraft Materials - Composite and Non-Metallic; 3.1 Composite and non-metallic other than wood and fabric
3.1.1 Characteristics, properties and identification of common composite andnon-metallic materials, other than wood, used in aircraft; Sealant and bonding agents. 3.1.2 The detection of defects/deterioration in composite and non-metallicmaterial. Repair of composite and non-metallic material.
3.2 Wooden structuresConstruction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used inaeroplanes; Preservation and maintenance of wooden structure; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure. 3.3 Fabric coveringCharacteristics, properties and types of fabrics used in aeroplanes; Inspections methods for fabric; Types of defects in fabric; Repair of fabric covering.
4. Corrosion: 4.1 Chemical fundamentals; Formation by, galvanic action process, microbiological, stress; 4.2 Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.
5. Fasteners: 5.1 Screw threads Screw nomenclature; Thread forms, dimensions and tolerances forstandard threads used in aircraft; Measuring screw threads; 5.2 Bolts, studs and screws Bolt types: specification, identification and markingof aircraft bolts, international standards; Nuts: self locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self tapping screws, dowels. 5.3 Locking devices Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.
5.4 Aircraft rivets Types of solid and blind rivets: specifications and identification, heattreatment.
6. Pipes and Unions
6.1 Identification of, and types of rigid and flexible pipes and their connectorsused in aircraft;
6.2 Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air systempipes.
7. Springs Types of springs, materials, characteristics and applications.
8. Bearings Purpose of bearings, loads, material, construction; Types of bearings and their application.
9. Transmissions Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and drivinggears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.
10. Control Cables Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables;Aircraft flexible control systems.
11. Electrical Cables and Connectors Cable types, construction and characteristics; High tension and co-axial cables; Crimping;Connector types, pins, plugs, sockets, insulators, current andvoltage rating, coupling, identification codes.

AME 120 MAINTENANCE PRACTICES (6)
1. Safety Precautions-Aircraft and Workshop Aspects of safe working practices including precautions to take whenworking with electricity, gases especially oxygen, oils and chemicals.Also, instruction in the remedial action to be taken in the

event of a fireor another accident with one or more of these hazards includingknowledge on extinguishing agents.
2. Workshop Practices Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.
3. Tools Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods. Operation, function and use of electrical general test equipment;
4. Avionic General Test Equipment Operation, function and use of avionic general test equipment.
5. Engineering Drawings, Diagrams and Standards Drawing types and diagrams, their symbols, dimensions, tolerances andprojections; Identifying title block information;Microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS,NAS and MIL; Wiring diagrams and schematic diagrams.
6. Fits and Clearances Drill sizes for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts.
7. Electrical Cables and Connectors Continuity, insulation and bonding techniques andtesting; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions; Wiring protection techniques: Cable looming andloom support, cable clamps, protective sleevingtechniques including heat shrink wrapping, shielding.
8. Riveting Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.
9. Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; nstallation and clamping of pipes.
10. Springs Inspection and testing of springs.
11. Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.
12. Transmissions Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull rod systems.
13. Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.
14. Material handling: 14.1 Sheet Metal Marking out and calculation of bend allowance;Sheet metal working, including bending and forming; Inspection of sheet metal work.
14.2 Composite and non-metallic Bonding practices; Environmental conditions Inspection methods
15. Welding, Brazing, Soldering and Bonding; 15.1 Soldering methods; inspection of soldered joints.
15.2 Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.
16. Aircraft Weight and Balance
16.1 Centre of Gravity/Balance limits calculation: use of relevant documents; 16.2 Preparation of aircraft for weighing; Aircraft weighing;
17. Aircraft Handling and Storage Aircraft taxiing/towing and associated safety precautions; Aircraft jacking, chocking, securing and associated safety precautions; Aircraft storage methods; Refuelling/defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies. Effects of environmental conditions on aircraft handling and operation.
18. Disassembly, Inspection, Repair and Assembly Techniques
18.1 Types of defects and visual inspection techniques; Corrosion removal, assessment and reprotection.
18.2 General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes; 18.3 Non destructive inspection techniques including, penetrant,radiographic, eddy current, ultrasonic and boroscope methods.
18.4 Disassembly and re-assembly techniques. 18.5 Trouble shooting techniques
19. Abnormal Events:
19.1 Inspections following lightning strikes and HIRF penetration.
19.2 Inspections following abnormal events such as heavy landings andflight through turbulence.
20. Maintenance Procedures Maintenance planning; Modification procedures;Stores procedures;Certification/release procedures;Interface with aircraft operation; Maintenance Inspection/ Quality Control/Quality Assurance; Additional maintenance procedures; Control of life limited components.

AME 125 BASIC AERODYNAMICS (3)
1. Physics of the Atmosphere International Standard Atmosphere (ISA), application to aerodynamics.
2. Aerodynamics Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relativeairflow, upwash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and washout, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant; Generation of Lift and Drag: Angle of Attack, Lift coefficient, Dragcoefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost.
3. Theory of Flight Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation.
4. Flight Stability and Dynamics Longitudinal, lateral and directional stability (active and passive).

AME 130 HUMAN FACTOR (3)
1. General The need to take human factors into account; Incidents attributable to human factors/ human error; ‘Murphy's’ law.
2. Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.
3. Social Psychology Responsibility: individual and group; Motivation and deımotivation; Peer pressure; ‘Culture’ issues; Team working; Management, supervision and leadership.
4. Factors Affecting Performance Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.

5. Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.
6. Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.
7. Communication Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.
8. Human Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents); Avoiding and managing errors.
9. Hazards in the Workplace Recognising and avoiding hazards; Dealing with emergencies.

AME 135 ABIATION LEGISLATION (3)
1. Regulatory Framework Role of International Civil Aviation Organisation; Role of EASA; Role of the Member States; Relationship between Part-145, Part-66, Part-147 and Part- M; Relationship with other Aviation Authorities.
2. Part-66 - Certifying Staff — Maintenance
Detailed understanding of Part-66.
3. Part-145 - Approved Maintenance Organisations Detailed understanding of Part-145.
4. JAR-OPS - Commercial Air Transportation Air Operators Certificates; Operators Responsibilities; Documents to be Carried; Aircraft Placarding (Markings);
5. Aircraft Certification: 5.1 General Certification rules: such as EACS 23/25/27/29; Type Certification; Supplemental Type Certification; Part-21 Design/Production Organisation Approvals.
5.2 Documents Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station Licence and Approval.
6. Part-M Detailed understanding of Part-M.
7. Applicable National and International Requirements for (if notsuperseded by EU requirements)
7.1 Maintenance Programmes, Maintenance checks and inspections; Master Minimum Equipment Lists, Minimum Equipment List, DispatchDeviation Lists; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals structural repair manual, illustrated parts catalogue, etc. 7.2 Continuing airworthiness; Test flights; ETOPS, maintenance and dispatch requirements; All Weather Operations, Category 2/3 operations and minimum equipment requirements.
AME 140 TURBINE AEROPLANE AND AERODYNAMICS STRUCTURE AND SYSTEMS (6)
1. Theory of Flight Aeroplane Aerodynamics and Flight ControlsOperation and effect of: roll control: ailerons and spoilers; pitch control: elevators, stabilators, variable incidence stabilisers andcanards; yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edgedevices; Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamicbalance panels; 1.2 High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight, Machnumber, critical Mach number, compressibility buffet, shock wave,aerodynamic heating, area rule; Factors affecting airflow in engine intakes of high speed aircraft; Effects of sweepback on critical Mach number.
2. Airframe Structures — General Concepts: 2.1 Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress,fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision; Aircraft bonding. 2.2 Construction methods of: stressed skin fuselage,formers, stringers, longerons, bulkheads, frames,doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anticorrosiveprotection, wing, empennage and engineattachments; Structure assembly techniques: riveting, bolting,bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment andsymmetry checks.
3. Airframe Structures- Aeroplanes
3.1 Fuselage (ATA 52/53/56) Construction and pressurisation sealing; Wing, stabiliser, pylon and undercarriageattachments; Seat installation and cargo loading system; Doors and emergency exits: construction, mechanisms, operation andsafety devices; Windows and windscreen construction and mechanisms. 3.2 Wings (ATA 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments. 3.3 Stabilisers (ATA 55) Construction; Control surface attachment. 3.4 Flight Control Surfaces (ATA 55/57) Construction and attachment; Balancing — mass and aerodynamic.
3.5 Nacelles/Pylons (ATA 54) Construction; Firewalls; Engine mounts.
4. Air Conditioning and Cabin Pressurisation (ATA 21): 4.1 Air supply Sources of air supply including engine bleed, APU and ground cart; 4.2 Air Conditioning Air conditioning systems; Air cycle and vapour cycle machines; Distribution systems; Flow, temperature and humidity control system. 4.3 Pressurisation Pressurisation systems; Control and indication including control and safety valves; Cabin pressure controllers; Safety and warning devices; Protection and warning devices.
5. Instruments/Avionic Systems
5.1 Instrument Systems (ATA 31) Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems; Other aircraft system indication. 5.2 Avionic Systems Fundamentals of system layouts and operation of:Auto Flight (ATA 22); Communications (ATA 23); Navigation Systems (ATA 34).
6. Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation; AC power generation; Emergency power

generation; Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection; External/Ground power.
7. Equipment and Furnishings (ATA 25) 7.1 Emergency equipment requirements; Seats, harnesses and belts. 7.2 Cabin lay-out;Equipment lay-out; Cabin Furnishing Installation; Cabin entertainment equipment; Galley installation; Cargo handling and retention equipment; Airstairs.
8. Fire Protection (ATA 26)
8.1 Fire and smoke detection and warning systems; Fire extinguishing systems;System tests. 8.2 Portable fire extinguisher
9. Flight Controls (ATA 27) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire;Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks systems; Balancing and rigging; Stall protection/warning system.
10. Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling; Longitudinal balance fuel systems.
11. Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.
12. Ice and Rain Protection (ATA 30) Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; De-icing systems: electrical, hot air, pneumatic and chemical; Rain repellant; Probe and drain heating. Wiper systems.
13. Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency;Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering.
14. Lights (ATA 33) External: navigation, anti-collision, landing, taxiing, ice;Internal: cabin, cockpit, cargo; Emergency.
15. Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings;
16. Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.
17. Water/Waste (ATA 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.
18. On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).

AME 145 GAS TURBINE ENGINE (3)
1. Fundamentals Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; The relationship between force, work, power, energy, velocity,acceleration; Constructional arrangement and operation of turbojet, turbofan,turboshaft, turboprop.
2. Engine Performance Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultantthrust, thrust horsepower, equivalent shaft horsepower, specific fuelconsumption; Engine efficiencies; By-pass ratio and engine pressure ratio; Pressure, temperature and velocity of the gas flow; Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations.
3. Inlet Compressor inlet ducts; Effects of various inlet configurations; Ice protection.
4. Compressors Axial and centrifugal types; Constructional features and operating principles and applications; Fan balancing; Operation; Causes and effects of compressor stall and surge; Methods of air flow control: bleed valves, variable inlet guide vanes,variable stator vanes, rotating stator blades; Compressor ratio.
5. Combustion Section Constructional features and principles of operation.
6. Turbine Section Operation and characteristics of different turbine blade types; Blade to disk attachment; Nozzle guide vanes; Causes and effects of turbine blade stress andcreep.
7. Exhaust Constructional features and principles of operation; Convergent, divergent and variable area nozzles; Engine noise reduction; Thrust reversers.
8. Bearings and Seals Constructional features and principles of operation.
9. Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.
10. Lubrication Systems System operation/lay-out and components.
11. Fuel Systems Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.
12. Air Systems Operation of engine air distribution and anti-ice control systems, includinginternal cooling, sealing and external air services.
13. Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance sa fety requirements.
14. Engine Indication Systems Exhaust Gas Temperature/Inter-stage Turbine Temperature; Engine Thrust Indication: Engine Pressure Ratio, engine turbinedischarge pressure or jet pipe pressure systems;Oil pressure and temperature;Fuel pressure and flow; Engine speed; Vibration measurement and indication; Torque;Power.
15. Power Augmentation Systems Operation and applications; Water injection, water methanol; After burner systems.
16. Turbo-prop Engines Gas coupled free turbine and gear coupled turbines; Reduction gears; Integrated engine and propeller controls; Overspeed safety devices.
17. Turbo-shaft engines Arrangements, drive systems, reduction gearing, couplings, controlsystems.
18. Auxiliary Power Units (APUs) Purpose, operation, protective systems.
19. Powerplant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, antivibrationmounts, hoses, pipes, feeders, connectors, wiring looms, controlcables and rods, lifting points and drains.
20. Fire Protection Systems Operation of detection and extinguishing systems.
21. Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and

parameters; Trend (including oil analysis, vibration and boroscope) monitoring; Inspection of engine and components to criteria, tolerances and dataspecified by engine manufacturer; Compressor washing/cleaning; Foreign Object Damage.
22. Engine Storage and Preservation Preservation and depreservation for the engine and accessories/ systems.

AME 150 PROPELLER (3)
1. Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed;Propeller slip; Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance.
2. Propeller Construction: Construction methods and materials used in wooden, composite andmetal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speeding propeller; Propeller/spinner installation.
3. Propeller Pitch Control Speed control and pitch change methods, mechanical andelectrical/electronic; Feathering and reverse pitch; Overspeed protection.
4. Propeller Synchronising Synchronising and synchrophasing equipment.
5. Propeller Ice Protection Fluid and electrical de-icing equipment.
6. Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/ repair schemes; Propeller engine running.
7. Propeller Storage and Preservation Propeller preservation and depreservation.

AVN 100 INTRODUCTION TO AVIATION AND AEROSPACE (3)
This course provides a broad understanding of all aspects of the air transportation and aerospace industries. Lectures will cover what has happened in the industry to date, with emphasis on present and future developments in air transportation. The course will include the impact the airline industry is making on airports and other segments of aviation and aerospace. Must be completed with a C- or better.

AVN 102 PRIVATE PILOT THEORY (3)
This course will familiarize the student with theories associated with flight. These include aerodynamics, weather, FAA regulations, navigation, airports, airspace and aviation safety. Must be completed with a C- or better.

AVN 104 HISTORY OF AVIATION AND AEROSPACE (3)
Purpose of this course is to present the historical antecedents leading to the conquest of the air and the evolution of aviation and aerospace progress to present day. Must be completed with a C- or better.

AVN 116 AVIATION SAFETY AAAA(3)
This course provides the student with a detailed introduction to aspects of aviation safety as well as the associated components of flight human factors, aircraft technology, weather related accidents and accident investigation. Prereq: AVN 100, course must be completed with a C- or better.

AVN 202 AIRLINE OPERATION (3)
The purpose of this course is to introduce the student to operational aspects of airline management. Topics to be covered include management, leadership, labor relations, marketing, forecasting, and fleet planning Prereq: AVN 100, course must be completed with a C- or better

AVN 205 INTRODUCTION TO AIRPORT ADMINISTRATION (3)
This course examines airport operations, safety and security, various administrative roles within the airport community, and the impact airports can have on local and regional economies. Students will explore the unique role public airports plan as interface between the traveling public and private airlines. Prereq: AVN 100, course must be completed with a C- or better.

AVN 275 AVIATION METEOROLOGY (3)
An introductory study of the key elements of the atmosphere's structure from the earth's surface to the upper levels; weather systems and hazards to aviation operation plus impact of adverse weather on aeronautical operations. Course will include \review of air mass characteristics, frontal weather, and pressure system structure. Prereq: AVN 102 or equivalent, course must be completed with a C- or better.

AVN 315 AVIATION LAW (3)
The purpose of this course is to increase the student's knowledge of aviation law and regulations. Particular attention will focus on the American legal system; important legal concepts, regulators of the industry and international aviation law. Case studies will be discussed throughout the course. Prereq: AVN 100 and junior standing, course must be completed with a C- or better.

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Md. Abdur Rouf, Master of science in Physics (with specialization in Electronics) in 1964; Bachelor of science in 1961; Obtained Inspection permit cat.class 2 for Electric Workshop, PIA Karachi 1967; Obtained AME License on Cat.X Direct reading Magnetic Compass from D.G.C.A Bangladesh in 1973;Obtained inspection permits cat.class 1 For Electric Workshop, Bangladesh Airlines in 1975; Obtained Inspection Authorization Cad.SCAA/ W-12 in Sudan Airways in 1983.
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- Dr. J. Farrow, ISU
- Mr. M. Franci, SES
- Mr. M. Halliwell, SES Engineering
- Dr. H. Hill, ISU
- Prof. J. Logsdon, George Washington University
- Prof. A. Okanlawon, International Business School
- Dr. S. Pace, George Washington University
- Dr. B. Shishko, Jet Propulsion Laboratory
- Prof. M. Simpson, ISU
- Dr. L, -J. Smith, University of Bremen

School of Engineering Technology

Prof. Dr. Angie Bukley, USA

Full Professor, Space Engineering, Dean PhD in Electrical Engineering (Control Theory), University of Alabama, Huntsville, USA. Formerly Associate Vice President and Chief Administrator for University of Tennessee Space Institute and Associate Dean for Research and Graduate Studies, Russ College of Engineering & Technology, Ohio University. Served as Director of Laser Applications with the Aerospace Corporation and was assigned to the Airborne Laser System Program Office, Kirtland Airforce Base, New Mexico. Over 25 years in the aerospace business with seven years service at the NASA Marshall Space Flight Center, Alabama directing the Large Space Structures Controls Laboratory and working on remote sensing applications. SSP 93 Alumna. Active in AIAA (Associate Fellow), AAS, IFAC, NSS, SWE, EWB, and ASEE. Recipient of numerous awards for technical achievement.

Prof. Gilles Clement, France

Full Professor, Space Life Sciences PhD Natural Sciences, University of Paris VI/CNRS. PhD Neurobiology and Master of Physiology, University of Lyon I/INSERM. Holder of the CNES Faculty Chair at ISU. Previous positions include: Director of Research at the CNRS Centre de Recherche Cerveau et Cognition, Toulouse; Senior Research Scientist at the CNRS Laboratoire de la Perception et de l'Action, Paris; Project Scientist at the Institute of Space Medicine and Physiology (MEDES), Toulouse; Visiting Scientist at the Neurosciences Laboratory, NASA Johnson Space Center, Houston. Visiting Professor at the Ohio University Russ College of Engineering and Technology, Athens. Main research interests include the effects of microgravity on posture, eye movements, spatial orientation, and visual perception in astronauts; neuropsychology studies in patients with balance disorders; and artificial gravity. Principal Investigator of human physiology experiments flown on Salyut, Mir, Space Shuttle, Spacelab, and the International Space Station.

Dr. John Farrow, UK

Associate Professor, Space Applications PhD (Laser Transmission through the Atmosphere), University of Essex, MSc Quantum Electronics, University of Essex, BSc Physics, University of Sheffield. Formerly Head of Scientific Spacecraft Studies, Mission and Systems Department, Matra Marconi Space (MMS) UK Ltd. (1968-1999). Space system engineering and management of proposals and feasibility studies of Earth observation and scientific satellites (including participation in early program phases of ESA missions such as ERS, Giotto, SOHO, Meteosat Second Generation, Polar Platform, XMM,

etc). Author of several publications in the field of Earth observations and space science missions. Fellow of the British Interplanetary Society (FBIS). Chair of the Organizing Team for ISU's series of Annual International Symposia.

 Dr. Hugh Hill, Ireland
Associate Professor, Space Sciences PhD in Astronomy (avec Mention Très Honorable et les Félicitations du Jury), Institut d'Astrophysique Spatiale – CNRS, Orsay and Muséum National d'Histoire Naturelle, Paris. MSc awarded for meteorite research completed at the Universities of Dublin (Trinity College) and Cambridge. BA (Physics and Computing), Open University, U.K. Formerly employed at Armagh Planetarium, Ireland (1986-1994). Associate Lecturer in Astronomy & Planetary Science and Location Advisor for the Open University (1995-1998). Fellowship holder, NASA Goddard Space Flight Center (1999-2002). Research interests include: astrochemistry, astrobiology, and experimental microgravity. Evaluator for the NASA Astrobiology Institute and referee for several peerreviewed journals. Member of several academic committees and societies including the Meteoritical Society and the European Astrobiology Network Association.

 Dr. Hideto Suzuki, Japan
Professor, Space Engineering PhD Mathematical Engineering and Information Physics, University of Tokyo. On detachment to ISU from JAXA. Previous positions with JAXA include Director of the Guidance and Control Group, the Aerospace Research and Development Directorate; Director of the Spacecraft Guidance, Control and Dynamics Engineering Group, Institute of Space Technology and Aeronautics; Head of the Expert Group for Guidance, Control and Dynamics, Office of Research and Development; Director of NASDA (now JAXA) Paris Office. Formerly Visiting Researcher at the NASA Langley Research Center. Professional activities include: design and analysis of launch vehicle guidance and control systems; development of precision gyroscopes for space use; design and analysis of fault tolerant systems for spacecraft; and, development of GPS receivers, attitude sensors and attitude control actuators.

 Dr. Chris Welch, UK
Associate Professor, Space Engineering, Director, Masters Programs PhD Spacecraft Engineering, Cranfield University, MSc Experimental Space Physics, University of Leicester, BSc (Hons) Physics, Cardiff University. Formerly Principal Lecturer in Astronautics and Director of the Aerospace Research Centre at Kingston University, UK. Current research interest in space propulsion, microgravity science and planetary exploration. Professional memberships include Fellow of the British Interplanetary Society and Associate Fellow of the American Institute of Aeronautics and Astronautics. Visiting lecturer in space propulsion at Cranfield University. Board member of several space-related organizations. Extensive media experience. Significant track record in both space education and outreach (recipient of the 2009 Sir Arthur Clarke Award for Space Education) and higher education.

 Dr. Vasilis Zervos, Greece
Associate Professor, Space Economics and Policy DPhil in Economics (The Economics of the European Space Industry), University of York, UK; MSc in Economics, University of Birmingham, UK with focus on macroeconomic policies and the European Central Bank; BA in Economics, American College of Greece, Athens, Greece. Formerly employed at the University of York Economics Department and Nottingham University Business Scholl (Industrial Economics). Associate member, Strasbourg University (BETA- Bureau d'Economie Théorique et Appliquée). Associate Professor in economics and policy. Teaching, consulting and research interests and publications in the field of economics, primarily focused on space, aerospace and defence industries and policies, as well as foreign direct investment,

strategic partnerships and economics of innovation and technology policy. Referee for numerous peer-reviewed Economics and Science and Technology Journals.

 Dr. Veronica La Regina, Italy
PhD Studies in Economic Sciences, Milan State University, Italy and Master in Institutions and Space Policies, SIOI, Rome, Italy. Formerly, Veronica La Regina was Resident Fellow, seconded by Italian Space Agency (ASI), at European Space Policy Institute (ESPI). Prior to joining ESPI, she was employed at Telespazio SpA, satellite services provider, in Italy, where she worked in the department of business strategies and marketing since 2007. Previously she held position as Experienced Research at Wave Energy Centre in Lisbon (Portugal), where she took care of the public policy issues related with the development and deployment of wave energy in Europe. Even previously, she was economic researcher at Osservatorio Filas, center of socio-economic researches for innovation of the SMEs. She has been invited to give lectures about energy economics and space issues. She is leading research on the topics of satellite communications, thus she has been involved in the main European debates concerning with European Technology non-dependence and broadband implementation.

In addition to part-time/on-line faculty, courses are delivered by a number of invited lecturers drawn from the academic, government and industry sectors from around the world. Recent lecturers have included :

- Philippe Achilleas*, IDEST, Université de Paris Sud, France
- Yasuhiro Akahoshi, Kyushu Institute of Technology, Japan
- Audrey Allison**, The Boeing Company, USA
- Colette Andrée, University of Basle, Switzerland
- Jacques Arnould, CNES, France
- Laurent Bach, Universite Louis Pasteur, Bureau d'Economie Théorique et Appliquée, France
- Marco Beijersbergen, cosine Research BV, The Netherlands
- Rudolf Benz, EADS Space Astrium, Germany
- Jon Bergstrom**, Bergstrom Learning Center, USA
- Philippe Berthe*, ESA – ESTEC, The Netherlands
- Gerhard Bethscheider, SES Global, Luxembourg
- Christophe Bonnal, CNES, France
- Michel Bousquet*, Institut Supérieur de l'Aéronautique et de l'Espace (ISAE), France
- Milan Cermack**, ACG Space Technologies Corporation, Canada
- Fredrik Bruhn, ÅAC Microtec AB / ÅAC Aerospace, Sweden
- Claudio Bruno, University of Rome "La Sapienza", Italy
- Dennis Burnett, EADS North America, USA
- Stephen Clandillon, SERTIT, France
- Philippe Clerc, CNES, France
- Alan Cooper, ESA HQ, France
- Juan de Dalmau*, ESA- ESTEC, The Netherlands
- Guillaume de Dinechin, ISB, International Space Brokers, France
- Vincent Denis, SE Consulting, France
- Jean-Luc Dimarcq, SEMIA, France
- Erwin Duhamel, ESA HQ, France
- Fabian Eilingsfeld, PRICE Systems Ltd., Germany
- Peter Elson, JLT Reinsurance Brokers, UK
- Leo Enright, Space Journalist, Ireland
- Paulo Esteves**, Institut Supérieur de l' Aéronautique et del'Espace (ISAE), France
- Reinhold Ewald, ESA-EAC, Germany
- André Farand**, ESA Headquarters, France
- Stefano Fiorilli*, ESA-ESTEC, The Netherlands
- Valentin Fontana, FS Communications GmbH, Switzerland
- Severine Frank-Muller, KPMG Audit, France
- Enrique Garcia, Mier Comunicaciones S.A., Spain
- Louis-François Guerre, NOVELTIS, France
- Ozgur Gurtuna*, Turquoise Technology Solutions, Inc.,Canada

- Jeffrey Hoffman*, Massachusetts Institute of Technology, USA
- Marcello Ingrassia, Private Consultant, Italy
- Bhupendra Jasani, King's College London, UK
- Rüdiger Jehn*, ESA-ESOC, Germany
- Philippe Jung, retired from Alcatel Space, France
- Otto Koudelka**, Technical University Graz, Austria
- Jörg Kreisel, International Consultant (JKIC), Germany
- Sebastien Letélié, IMPROVE, France
- Ying-Hui Li, China Astronaut Research and Training Center, China
- Pierre Lionnet, EUROSPACE, France
- Mark Lupisella, NASA Goddard Space Flight Center, USA
- Bernd Madauss*, Project Management Team MADAUSS, Germany
- Pierre Margue, SES Global, Luxembourg
- Gary Martin*, NASA Ames Reserach Center, USA
- Christopher McKay, NASA Ames Research Center, USA
- Bernard Molard, EADS Astrium, France
- Robert Parkinson**, Consultant Engineer retired From EADS Astrium, UK
- Xavier Pasco, Fondation pour la Recherche Stratégique, France
- Laurie Peterson, NASA Johnson Space Center, USA
- Peter Petzal, 2C International, UK
- Radhika Ramachandran, Indian Space Research Organization, France
- Claude Rousseau, Northen Skies Research, France
- Thierry Ruaud, Astrium ST, France
- Michael Rycroft*, CAESAR Consultancy, UK
- David Sagar, International Maritime Organization, UK
- Leandro Sánchez de la Rosa, ESA HQ, France
- Bernd Schäfer**, DLR, Germany
- Kai-Uwe Schrogl**, European Space Policy Institute, Austria
- Jörg Schröter, ESA-ESTEC, The Netherlands
- Wolfgang Seboldt**, DLR, Germany
- Robert Shishko**, NASA Jet Propulsion Laboratory, USA
- Carol Simpson, International Church of Strasbourg, France
- Vern SInghroy*, Canadian Centre for Remote Sensing, Canada
- Klaus Slenzka**, OHB-System GmbH, Germany
- Lesley Jane Smith, Solicitor and Notary Public, Germany
- Gisela Süss, ESA HQ, France
- Martin Tajmar, Austrian Research Centers GmbH, Austria
- Kazuyuki Tasaki, JAXA Paris Office, France
- Robert Thirsk, NASA Johnson Space Center, USA
- Harley Thronson, NASA Goddard Space Flight Center, USA
- Erin Tranfield, EMBL Heidelberg, Germany
- Laurent Valignon, SatConsult, France
- Javier Ventura-Traveset, ESAC, European Space Astronomy Centre, Spain
- Andreas Vogler, Architecture and Vision, Germany
- Alain Wagner*, Astrium SAS-Space Transportation, France
- Nicolas Walter, European Science Foundation, France
- Dapeng Wang, China Aerospace Science and Technology Corporation (CASC) Europe, France
- Pete Worden*, NASA Ames Research Center, USA
- Kazuya Yoshida*, Tohoku University, Japan
- Shuang-Nan Zhang, Chinese Academy of Sciences, China
- Olga Zhdanovich*, MODIS, The Netherlands
- Cornelius Zund, Astrium ST, France

**** ISU Faculty***

***** ISU Adjunct Faculty***

ISU= International Space University, France

NEWPORT UNIVERSITY CED
Exclusively On-line Education for Adults
2C Aizupes street, Rîga, Latvia, LV-1004, EU. Phone: +37129112333
www.newportuniversity.edu.lv

APPLICATION FOR ADMISSION

Application & Registration Fee: US $300.00
Approved Support Center and Location: _____ *(if applicable)*

Personal Data (Please type or print legibly)

Name _____
First Middle Last

Previous Names: _____

Birthdate: _____/_____/_____ Social Security #: _____-_____-_____ Gender: ☐ Male ☐ Female

Mailing Address: _____ Work/Day Telephone: ( ) _____-_____
Number/Street

_____ Home Telephone: ( ) _____- _____
City, State, Postal Code, County

Permanent Home Address: _____ Email: _____
Number/Street

_____
City, State, Postal Code, Country

Have you ever applied before at Newport University CED? _____ When? _____
Month / Year

How did you hear about Newport University CED? _____

Previous Newport University CED Student ID # _____

Degree (What is the specific degree program for which you are making application?)

_____
Degree Title Major

Academic Data (This section **MUST** be completed)
List in chronologically all colleges and other educational institutions attended including high school. Please contact college/universities attended to have **official transcripts** sent directly to Newport University at address above.

High School	**Location**	**Dates Enrolled**		**Units Completed**	***Degree/ Date***
College / University	**Location**	**Dates Enrolled**		**Units Completed**	**Degree / Date**

I hereby make application for admission to Newport University CED. The distance/on-line concepts utilized by the University have been explained to my complete satisfaction. I further understand that the University is legally authorized to award degrees to all students who meet graduation requirements. All fees and tuition must be paid in full prior to graduation. I understand that a degree cannot be conferred until all my financial obligations have been completed or otherwise cleared with the University. I understand that all application materials sent to Newport University CED become the property of the University and cannot be returned. Application & Registration fee of US $300.00 is non-refundable.

_____ _____
Applicant's Signature Date

Revised: 08/13/2009/admin/App & every/forms for students

APPROVAL AND RECOGNITION

Incorporation

Newport University CED incorporated (No. 4003630619) in the Republic of Latvia, European Union, as an autonomous American Style on-line educational instituion to offer academic and professional courses in higher education through accredited distance/on-line education methodologies and also with the support of its Approved Support Centers to confer Diploma, Bachelor, Master and Doctoral degrees to its students/candidates, who successfully qualify for those awards.

Royal Charter

In July 2011, as a mark of recognition and support for the University's educational programs in Ghana and throughout Africa, the University was awarded a Royal Charter from the Royal Highness Nana Dr. Obeng Wiabo V, the Chief of Gomoa Nyanyano, and Oshihene (Chairman of Lands) of Gomoa Akempim Traditional Area, Ghana. The Royal Highness also has given the University a complete open space on the second floor from his establishment (Royal Pillar International School), newly extended building to bring tertiary education in Ghana. Ghana's historic traditional monarchies are recognized under the Chieftaincy Act 1971.

Approval & Decree

Newport University CED is duly approved under the Decree No. *05/09/08* of the International Center of Informatization (CII) and International Informatization Academy (IIA) joint Senate as an autonomous Post-secondary Non-formal (online) Adult Educational Institution as a Department of World Distributed University in affiliation with the Tomsk State University. The International Center of Informatization (CII) established at Brussels in Belgium in 1999 and the International Informatization Academy (IIA) in a General Consultative State with Economic and Social Council of the United Nations from 1995, the IIA established in 1990 at Moscow in the Russian Federation has created the functional university World Distributed University in 1997. The IIA is the only of its own kind that has its branch "Informatization and United Nations" at the United Nation's Headquarters in New York.
Website: http://www.iia.ca/cii

International Institutional Accreditation

International States Parliament for Safety and Peace (ISPSP), Italy desires to encourage International Education, and having reviewed the institutional qualification of the Newport University CED has granted a Decree of Official Accreditation and Recognition, Reg. No- 0/35-B bears full validity and recognition with all Governments and Nations members of the ISPSP, which under International Law Statute recognized by the Vienna Convention of April 18th, 1961 (1963) of the United Nations.
Website: http://www.parlamentomondialedeglistati.org

Equivalency

California State University, Frasno has Institute for International Credentials Evaluation which is one of the few U.S. credential evaluators that are entrusted to perform credential evaluation of credits earned from U.S. colleges and universities, as well as from foreign institutions. The Institute does not evaluate medical degrees. The Institute is an after-hours community service of the International Student Services and Programs office of the University.

Website: http://www.fresnostate.edu/studentaffairs/issp/iice

Academic Partners

Newport University CED is recognized and signed an Agreement with the International American University (IAU), Los Angeles, California, USA for offering dual degree certification and credit transfer facility to its students. The IAU is approved by the Bureau for Private Postsecondary Education (BPPE) current BPPE school code#: 41500926 and also listed on the California Post-secondary Education Commission (CPEC) website, on March 6, 2009, IAU was approved by the United States Immigration and Customs Enforcement (ICE) of the Department of Homeland Security (DHS) to accept and enroll foreign, non-immigrant F-1 students for academic degrees, its SEVIS school code#: LOS214F01373000.
Website: http://www.iau.la

Newport University CED is recognized and signed an Agreement with the International Space University (ISU), France for offering graduate degree certification and credit transfer facility to its students.
The ISU is a private non-profit institution, formally recognized as an institute of higher education in France by the French Ministry of Education (decree MENS0400386A of 27 February 2004). It specializes in providing graduate-level training to the future leaders of the emerging global space community at its Central Campus in Strasbourg, France, and at locations around the world.

Since its founding in 1987, ISU has graduated more than 3300 students from over 100 countries. Together with hundreds of ISU faculty and lecturers from around the world, ISU alumni comprise an extremely effective network of space professionals and leaders that actively facilitates individual career growth, professional activities and international space cooperation.
Website: http://www.isunet.edu

Affiliations

Newport University CED as a Department (Post-secondary Educational Institution) of the WDU is affiliated with the International Informatization Academy (IIA). This is a Unique Academy that enjoys the membership of the United Nations and has its branch "Informatization and United Nations" at the UN's Headquarters in New York. Since 1995 the I.I.A. has the General Consultative Status with the Economic and Social Council (ECOSOC) of the UN. There are only 131 organizations in the world who have the same Status, such as: International Chamber of Commerce, International Confederation of Free Trade Unions, International Women Council, International Federation of Red Cross and Red Crescent Societies, International Organization of Standardization and International Organization of Employees.
Website: http://www.iia.ca

Newport University CED is a Member of the United Nations Global Compact which is a strategic policy initiative for businesses that are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption. By doing so, business, as a primary agent driving globalization, can help ensure that markets, commerce, technology and finance advance in ways that benefit economies and societies everywhere. Academia adds critical dimensions to the Compact' s operations. Through research and educational resources, this sector can increase knowledge and understanding of corporate citizenship. In addition, academia plays an important role in shaping future business leaders and educating them on the importance of responsible citizenship.
Website: http://www.unglobalcompact.org/ParticipantsAndStakeholders/academic_participation.html

Newport University CED is a Member of the Principles of Responsible Management Education (PRME) mission is to inspire and champion responsible management education, research and thought leadership globally. The PRME are inspired by internationally accepted values such as the principles of the United Nations Global Compact. In the current academic environment, corporate responsibility and sustainability have entered but not yet become embedded in the mainstream of business-related education. The PRME are therefore a timely global call for business schools and universities worldwide to gradually adapt their curricula, research, teaching methodologies and institutional strategies to the new business challenges and opportunities.
Website: http://www.unprme.org/participants/index.php?sort=name&dir=asc&start=210

Newport University CED is a Full Institutional Member of the Adult Higher Educational Alliance (AHEA) and abides the guideline of the alliance to Assure the quality of the educational delivery of the institution by following the Principles of Good Practice for Alternative and External Degree Programs for Adults were published in 1990. Produced by an Alliance task force, the principals were sponsored by the Center for Adult Learning and Educational Credentials, American Council on Education and the AHEA. **Website:** http://ahea.org/institutions/

Newport University CED is a Full Institutional Member of the Latvian Adult Education Association (LAEA), which is a non-governmental, non-profit organization, that unites adult education providers in Latvia – both individuals and organization. LAEA

was founded on December 14, 1993 with support from Latvia's Ministry of Education and Science and Institute for International Cooperation of the German Adult Education Association.

LAEA has been a member organization of the European Association for the Education of Adults (EAEA) since 1995, joining the European Prison Education Association and European Adult Education Research Association (ESREA) in 1997. LAEA is a member of Latvian Platform of Development Education and Civic Alliance-Latvia.

The aim of LAEA – to promote development of non-formal adult education systems and to participate in life-long learning policy making, thereby promoting development of a civic, democratic and open society in Latvia.

Since its establishment LAEA has gained valuable experience in organizing various activities on local and national levels. LAEA has created a co-operation network of adult education providers from all towns and districts of Latvia, prepared trainers, elaborated and approved training programs, training and methodological materials.
Website: http://www.laea.lv/65/view.aspx

Newport University CED is a Corporate Partner of the Royal Aeronautical Society of London. The Society has over 18,000 members in over 100 countries, an international network of 70 branches, over 180 organizations now take part in the society's Corporate Partner scheme and more than 4000 young members worldwide. Newport University CED- School of Aeronautical Science and Management students are most welcome to join the Student membership, including FREE membership option and the graduates can become an Associate (ARAeS) through the Society's online professional development tool ***mypath***.
Website: http://www.raes.org.uk

Newport University CED business courses has been evaluated by the Oxford Association of Management (OXIM), United Kingdom and signed an Affiliation Agreement that the Doctor of Business Administration (DBA), Master of Business Administration (MBA) and Bachelor of Business Administration (BBA) holders have been recognized for Certified Doctor of Business Administration (CDBA), Certified Master of Business Administration (CMBA) and Certified Graduate of Business Administration (CGBA) membership awards respectively of the Association. The Oxford Association of Managers is recognized as a professional body by the UK Department for Business, Innovation & Skills. Department Of Business Innovation & Skills (BIS) is a ministerial department of the United Kingdom Government created on 5 June 2009 by the merger of the Department for Innovation, Universities and Skills (DIUS) and the Department for Business, Enterprise and Regulatory Reform (BERR). The department is responsible for UK Government policies on business regulation, operation & licensing, further education, higher education, innovation, science & research, skills, trade and training. The Oxford Association of Managers is listed in the 38th, 37th and 36th Edition of the British Qualifications – QUALIFICATIONS AWARDED BY PROFESSIONAL ASSOCIATIONS. **Website**: http://www.oxim.org

Newport University CED is a Full Member of the Eurasian Universities Union (EURAS) which is a non-profit international association, promoting cooperation among over 40 Universities from all around Europe, Asia and the Middle East and working for the global advancement of educational standards in the Eurasian region. EURAS aims to open the borders of education to the widest possible public and to favour the exchange of knowledge and best practices among higher education institutions from all the Eurasian region.
Website: http://www.euras-edu.org/index.asp?id=4

Newport Univerisity CED is a Member of the Association of University Leaders for a Sustainable Future (ULSF), USA which mission is to support sustainability as a critical focus of teaching, research, operations and outreach at colleges and universities worldwide through publications, research, and assessment. The ULSF also serves as the Secretariat for signatories of the 'Talloires Declaration', a ten-point action plan committing institutions to sustainability and environmental literacy in teaching and practice.
Website: http://www.ulsf.org/programs_talloires_signatories.html

Certification Partner

Newport University CED has its own Quality Assurances Services to confirm its affiliated college's/Approved Support Center's institutional quality based on the efficient mechanisms to ensure specific program quality and consistency standards by applying ISO 9001:2008 certification with a close partnership with the QSCert a Slovak-German multinational Certification Body of Management Systems
Website: http://www.qscert.sk

International Listing

Newport University CED's United Nations Education, Scientific and Cultural Organization (UNESCO) Listing.
Websiete: http://oerwiki.iiepunesco.org/index.php?title=Newport_University_CED

Worldwide Classroom
Consortium for International Education & Multicultural Studies: For the past 38 years, Worldwide Classroom have been compiling and sharing information about programs around the world which welcome international participation and further educational and intercultural goals. Newport University CED listed in the WWC directory.
Website:http://www.worldwide.edu/ci/latvia/flschools_adult.html

Worldwide Classroom (WWC) is listed in the directory of U.S. Department of Education (USNEI)

Policy on Nondiscrimination
Newport University CED admits students and faculty of any race, color, national and ethnic origin to all of the right, privileges, programs, and activities generally accorded or made available to students at the school. It does not discriminate on the basis of race, color, national and ethnic origin in administration of its educational policies, admissions, policies, scholarship and loan programs, and other school-administered programs.

Statement of Accreditation
Before undertaking any program of studies in higher education or training. Newport University CED strongly advises interested applicants to consult with licensing authorities, professional associations, colleges and universities, and prospective employees to determine with clarity if the study program will meet their professional requirements.

Note
Newport University CED is a Non-formal (on-line) Adult Education Institution accredited as a Department of the World Distributed University and Tomsk State University of Russia, by several Foreign Ministry of Education, which are recognized by the U.S Department of Education and CHEA through Foreign Credential Evaluation. Please note that in the United States, many licensing authorities require accredited degrees as the basis for eligibility for licensing. In some cases, accredited colleges may not accept transfer courses and degrees completed at unaccredited colleges, and some employers may require an accredited degree as a basis for eligibility for employment. Unlike most countries, in the United States there is no national procedure for licensing or accrediting universities and colleges. Accreditation is voluntary and is not the function of the US. Department of Education.

Notes…

NEWPORT UNIVERSITY CED

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Phone: +8801928993656

E-mail: info@newportuniversity.eu

Website: http://www.newportuniversity.eu
http://www.newportuniversity.edu.lv