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Contents

ABOUT THE UNIVERSITY and UNMANNED VEHICLES

Unmanned Vehicle University (UVU) was one of the first universities licensed to grant a master's of science degree in unmanned vehicle systems engineering (with air, ground, sea or space emphasis), and a doctorate of science degree in unmanned vehicle systems engineering as well as a certificate in unmanned aerial vehicle systems (UAV) project management in a wholly online curriculum. The university's primary focus is on unmanned air, ground, sea and space systems education and training. Many of the university's instructors have earned Doctor of Philosophy (Ph.D.) degrees in engineering and have a combined experience of over 500 years. They are subject matter experts in unmanned vehicles and systems. The university's unmanned aerial vehicle (UAV) instructor pilots have combined experience of over 60,000 hours in Predator, Reaper, Global Hawk, Hermes, Heron, Aerostar, and many small unmanned aerial vehicles such as the DJI Phantom and DJI Inspire.

An unmanned vehicle is defined as a vehicle without a human being on board the vehicle. Unmanned vehicles typically fall into one of three general categories based on how they are controlled:

1. Unmanned vehicles that are remotely controlled and guided by a human being that is not located on board the vehicle, or
2. Completely autonomous vehicles which are capable of sensing their environment and navigating on their own without any human interaction, or
3. Unmanned vehicles that combine the control characteristics of both 1 and 2 above in the same vehicle.

Within these three general categories, there can be almost as many types of unmanned vehicles as there are manned vehicles. Examples of these various types of vehicles include the following:

1. Unmanned ground vehicle (UGV), such as the autonomous or driverless car.
2. Unmanned aerial vehicle (UAV) or unmanned aircraft (UA) commonly referred to as a "drone" by the media.
3. Unmanned combat aerial vehicle (UCAV), primarily designed for military use in combat.
4. Unmanned sea/surface vehicle (USV), an unmanned ship designed for operation on the surface of the water (sea, lake, etc.)..
5. Unmanned undersea or underwater vehicle (UUV), sometimes called an autonomous underwater vehicle (AUV) designed for the operations under water.
6. Unmanned spacecraft, both remote controlled ("unmanned space mission") and autonomous ("robotic spacecraft" or "space probe").

There are also other types of unmanned vehicles such as unmanned trains, unmanned subways, unmanned farm equipment, etc.

Unmanned Vehicle University is focused on preparing students for a career in the growing field of civil and commercial unmanned vehicle systems markets. Traditionally, an unmanned aerial vehicle was a unoccupied reconnaissance vehicle or drone initially developed for military purposes to fly over combat zones and staging areas, dropping supplies to troops, releasing bombs, and carrying out intelligence, surveillance and reconnaissance missions on enemy forces. Based on this description and definition, most would believe that unmanned aerial vehicles are used strictly used for military benefits. This is not the case, nor is it the future. In recent years,

the commercial uses and demand for unmanned aerial vehicles has greatly increased. One of the main purposes of an unmanned aerial vehicle is to collect valuable information via remote sensing technologies for a variety of commercial industries. They may also be used to deliver messages, medicines, packages or products.

There are literally hundreds of commercial UAV applications and these are the focus of the university training. Some examples include precision agriculture, wind turbine inspection, solar panel inspection, aerial thermography, cargo delivery (Amazon, FedEx, UPS and DHL are all investigating), wildfire management, and search and rescue. For commercial unmanned ground vehicles, driverless cars (also known as self-driving cars) are in the news and will continue to mature. Several major car companies have already announced driverless cars within the next five years. These companies will need specially trained systems engineers. The curriculum that UVU offers fills that void in today's universities and colleges. Unmanned underwater vehicles (UUVs) or autonomous underwater vehicles (AUVs) are used by oil and gas companies for underwater pipelines. Finally, NASA has moved away from the launch business and has awarded contracts to SpaceX and Orbital Sciences to perform commercial satellite launches. There are over 20 commercial launch companies that will need UVU-trained unmanned space vehicle systems engineers.

Mission

We will employ the best faculty to research, develop, and deliver market leading unmanned vehicle systems curriculum to our students through the latest technology.

The mission of UVU is to educate the workforce, technology leaders, and entrepreneurs who will develop and use the unmanned vehicle systems of the future. Our central focus is to apply the principles of systems engineering to make unmanned vehicles more reliable, safe and efficient. We believe it is essential to educate unmanned vehicle systems engineers though a multidisciplinary program containing aeronautical, electrical, mechanical, systems engineering and project management courses. All academic courses are conducted online using state-of-the-art distance learning technology and methods.

Vision

OUR VISION: We will be the worlds best at providing unmanned vehicle systems education and training.

Unmanned Vehicle University exists to create a brilliant future for students and instructors to make significant contributions to the body of knowledge in the unmanned vehicle systems industry. By extending our reach globally, we will be recognized as a global leader in influencing major technical, social, economic, and policy decisions on unmanned vehicle systems.

Program Objectives

Graduates with the Master of Science Degree in Unmanned Vehicle Systems Engineering will be able to fulfill the following educational objectives:

1. Master the principles of systems engineering to prepare students to manage the development of new unmanned systems.

2. Demonstrate a strong technical knowledge in their field so that they can lead and direct engineering and scientific industry teams in their chosen field of study.
3. Foster innovation of new ideas, methods and techniques in unmanned systems engineering.

Graduates with the Doctor of Science Degree in Unmanned Vehicle Systems Engineering will be able to fulfill the following educational objectives:

1. Demonstrate an ability to conduct original independent research and make significant contributions to the current body of scientific knowledge in unmanned systems technology and development.
2. Develop and apply advanced experimental and/or computational skills appropriate to a professional researcher in the field of unmanned systems.
3. Lead unmanned systems research programs and communicate the findings in scientific forums.
4. Reach the highest academic level with the potential to become a leader and an authority in unmanned systems and technologies.

Program Goals

The purpose of the Master's of Science (MS) program is to provide students with the knowledge and skills necessary for a journeyman level professional career in unmanned systems engineering or to prepare students for their doctoral studies. This is done through course work providing specialization in one area of unmanned systems engineering and breadth in several other areas. Areas of specialization include unmanned air, ground, sea and space systems engineering.

The purpose of the Doctor of Science (DSc) program is provide candidates with the opportunity to demonstrate substantial scholarship and an ability to conduct independent research in the area of unmanned vehicle systems and unmanned technologies. Through academic course work and guided research, the program prepares DSc graduates to make new and original contributions in the field Unmanned Vehicle Systems and related technical fields.

History

Unmanned Vehicle University was founded in 2012 and is located in the heart of downtown Phoenix, Arizona. Unmanned Vehicle University was one of the first universities in the world licensed to grant masters of science degrees in unmanned systems engineering, doctorate degrees in unmanned systems engineering, and a certificate in unmanned vehicle systems project management in a completely online, distance-learning curriculum. These graduate programs prepare students for positions of program/project manager, program integration manager, business area manager, chief engineer, chief technical officer, systems engineer, consultant, analyst, researcher, and others. The project management certificate prepares students for a job as a project manager, field engineer, technical writer, quality assurance manager, cost accountant, logistics manager, integration technician, test analyst and aviation data monitor. Graduates may be responsible for planning, coordinating, and budgeting group efforts that translate operational needs into technology requirements. Our students learn the necessary skills to determine whether a system will meet cost, schedule, and performance goals.

Systems engineers and systems researchers perform a central role in realizing the success of unmanned systems. These professionals are in great demand by industry and government.

Students will learn a "big-picture" view of unmanned vehicle systems that considers every aspect of a project, from costs and environmental impact, to time lines and life expectancy of equipment. The student is exposed to electrical, aeronautical, mechanical and systems engineering disciplines and associated physics. This interdisciplinary degree program covers modeling, simulation, design, architecture, integration, man-machine-interface, and testing of complex unmanned vehicle systems, technologies, and processes. Students learn the underlying theoretical knowledge and are exposed to practical experiences applicable to unmanned systems development. An unmanned vehicle systems engineering degree will provide expert knowledge so that graduates can apply for employment in engineering, design, development, integration and test of unmanned air, ground, sea and space systems. Entrepreneurs will find the knowledge gained during these courses essential to starting up their own small business.

The Project Management course includes preparation for the entry level International Council on Systems Engineering's (INCOSE) Associate Systems Engineering Professional (ASEP) certification examination. INCOSE certification formally recognizes an individual's competency in the systems engineering process, and is widely acknowledged as a significant accomplishment by practitioners in the field.

Licensure and Accreditation

Unmanned Vehicle University is provisionally licensed by the Arizona State Board for Private Postsecondary Education to grant Master of Science degrees in Unmanned Vehicle Systems Engineering (air, ground, sea, or space emphasis), Doctor of Science degrees in Unmanned Vehicle Systems Engineering (air, ground, sea, or space emphasis) and a certificate in unmanned vehicle systems project management.
Contact Arizona State Board for Private Postsecondary Education:

Website: www.azppse.gov
Telephone: 602.542.5709

Unmanned Vehicle University is currently not accredited, but is preparing for national and/or regional accreditation.

Academic Integrity

All students are expected to adhere to the highest standards of academic integrity and compliance with the university's Distance Student Code of Conduct throughout all academic coursework and research activities.

Violations of academic integrity include, but are not limited to: cheating, fabrication of data, tampering, plagiarism, or aiding and/or facilitating such activities. At the graduate level, it is expected that students are familiar with these issues and that each student assumes personal responsibility for their own academic work.

Graduate Student Responsibilities

All graduate students enrolled at Unmanned Vehicle University are responsible for familiarizing themselves with all university and graduate policies and procedures. Each student should communicate directly with the university to ensure clarity on the expectations for degree completion.

Academic Year

Unmanned Vehicle University operates on a quarterly term schedule. For CY 2017, the quarterly term dates are as follows:

Term 1: 2 January to 24 March
Term 2: 3 April to 23 June
Term 3: 3 July to 22 September
Term 4: 2 October to 22 December

Educational Delivery

Unmanned Vehicle University uses CANVAS, an online state-of-the-art distance-learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments. CANVAS provides a comprehensive set of student and instructor video guides.

All courses are conducted over a 12 week term. Each week there will be lectures, reading assignments, multi-media and assignments/exams. Problem assignments can be papers, projects, problems or take home exams. There are two proctored online exams during the Master of Science Degree in Unmanned Vehicle Systems Engineering and three proctored exams in the Doctor of Science Degree in Unmanned Vehicle Systems Engineering. Exams are proctored using a proven online proctoring system provided by Proctor U. This eliminates the requirement for a student to go to a regional testing center. The instructor normally posts an assignment on Monday with a due date on the next Sunday so students have the flexibility to work when it is most convenient for them.

To excel in an asynchronous or partially synchronous learning environment, you must be independent and able to set deadlines for your work. You work at your own pace; however, there are deadlines for the assignments to be submitted. Instead of having an instructor lead you in a classroom, you will need to complete assignments on your own. You have the option to contact the instructor at any time with questions or to get clarification on a particular assignment.

Big Blue Button is a powerful web conferencing tool that is integrated with Canvas that allows the student to clearly see the instructor's computer desktop and hear his/her voice. The student may ask questions and receive answers in real time. The video presentations are excellent and even allow full motion video to be shared. At the appropriate date and time you simply click on the link and you will be automatically logged in. A link to the video recording will appear in Canvas within 1-2 hours of completing the recording session. Most students use their home computer to watch the recorded lectures but you can also download the Canvas application and watch from your iPhone, iPad or Android.

APPLICATION PROCESS

Application Submission

Unmanned Vehicle University offers an open enrollment policy allowing students to apply for and enroll into a degree program or certificate program prior to any term. Prospective students interested in applying to the Master of Science in Unmanned Vehicle Systems Engineering degree program or Doctor of Science in Unmanned Vehicle Systems Engineering degree program need to complete and submit the current application for admission.

Admissions Requirements

Master's of Science in Unmanned Vehicle Systems Engineering Degree

- University Application (Application Fee - $25)
- Enrollment agreement
- A Bachelor's degree in any field (note that some UVU classes have higher level math course prerequisites)
- Two letters of recommendation addressing your academic achievement and professional accomplishments. Typically these are from former professors or supervisors
- Official transcripts from all colleges/universities attended*

Doctor of Science in Unmanned Vehicle Systems Engineering Degree

- University Application (Application Fee - $25)
- Enrollment agreement
- A Master's degree in any field(note that some UVU classes have higher level math course prerequisites)
- Two letters of recommendation addressing your academic achievement and professional accomplishments. Typically these are from former professors or supervisors
- Official Transcripts from all colleges/universities attended*

Professional Certificate in Unmanned Vehicle Systems Project Management

- University Application (Application Fee - $25)
- Enrollment agreement
- High School Diploma
- Official transcripts*

*To be considered official, all transcripts must be received by Unmanned Vehicle University directly from the sending institution. Have transcripts sent to:

Unmanned Vehicle University
Attn: Registrar
1 East Washington Street, Suite 500
Phoenix, AZ 85004

Unmanned Vehicle University does not require graduate student applicants to submit scores from national admissions tests such as the Graduate Record Examination (GRE), Graduate Management Admission Test (GMAT), or the Miller Analogies Test.

Academic Credentials

Prospective students applying to the Master of Science in Unmanned Vehicle Systems Engineering degree program must have earned a bachelor's degree from an appropriately accredited institution**. Applicants must have maintained a minimum grade point average of 3.0 (on a 4.0 scale) in the last 60 semester credit hours or 90 quarter credit hours of undergraduate coursework.

Prospective students applying to the Doctor of Science in Unmanned Vehicle Systems Engineering degree program must have earned a master's degree from an appropriately accredited institution**. Applicants must have maintained a minimum 3.0 (on a 4.0 scale) in the last 30 semester credit hours or 60 quarter credit hours of graduate coursework.

***an appropriately accredited institution is accredited by an agency recognized by the United States Secretary of Education and/or the Council for Higher Education Accreditation (CHEA), or an accepted foreign equivalent that is listed in the International Handbook of Universities.*

International Applicants

Prospective international students with non-U.S. educational credentials must first obtain a foreign credentials evaluation from, Educational Credential Evaluators, Inc. (ECE), Post Office Box 92970 Milwaukee, WI 53202-0970, Tel: 414.289.3400, Fax: 414.289.3411, or another independent U.S. evaluation service approved by the university. Request forms and cost information are available on the ECE website (www.ece.org). International applicants seeking admission to graduate programs must obtain a general evaluation. Applicants interested in requesting transfer credits will need to obtain individual subject evaluations.

***Transcripts not in English must be evaluated by an appropriate third party and translated into English or evaluated by a trained transcript evaluator fluent in the language on the transcript. In this case, the evaluator must have expertise in the educational practices of the country of origin and include an English translation of the review. It is the responsibility of the prospective student to have this translation done and the student is responsible for any fees associated with the translation services.*

English Language Requirement

Applicants 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 demonstrate college-level proficiency in English through one of the following to meet admission requirements:

- Master of Science Degree: 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), 6.5 on the International English Language Test (IELTS), or 50 on the Pearson Test of English Academic (PTE Academic) Score Report.
- Doctoral of Science Degree: A minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL PBT), or 80 on the Internet Based Test (IBT), a 6.5 on the International English Language Test (IELTS), or 58 on the Pearson Test of English Academic (PTE Academic) Score Report.
- A minimum grade of Level 3 on the ACT COMPASS's English as a Second Language Placement Test;
- A minimum grade of Pre-1 on the Eiken English Proficiency Exam;
- A minimum B-2 English proficiency level identified within the Common European Framework of Reference (CEFR) standards and assessed through various ESOL examinations, including the University of Cambridge;
- A transcript indicating completion of at least 30 semester credit hours with an average of "B" or higher for Master of Science or Doctor of Science Degree.

Transfer Credits

The acceptance of transfer credits between institutions lies within the discretion of the receiving college or university. Credits earned at other institutions may or may not be accepted by

Unmanned Vehicle University. Likewise, credits earned at Unmanned Vehicle University may or may not be accepted by another institution depending upon the institution's own programs, policies, and regulations. Students planning to complete college or university credits elsewhere before applying to Unmanned Vehicle University are advised to contact the Admissions Office and check on the transferability of credits from their current or former institution prior to enrolling in Unmanned Vehicle University. Likewise, any student relying on Unmanned Vehicle University credits for transfer to or enrollment in another institution is urged to check with that gaining institution prior to enrollment.

Certificate Program – Transfer Credits Maximum

Students pursuing a Certificate Program may transfer up to 4 semester credit hours from an appropriately accredited institution(s), which satisfy the subject matter, and curriculum requirements of the student's chosen program at Unmanned Vehicle University.

Master's of Science Degree – Transfer Credits Maximum

Students pursuing a Master's Degree may transfer up to 8 semester credit hours from an appropriately accredited institution(s), which satisfy the subject matter, and curriculum requirements of the student's chosen program of study at Unmanned Vehicle University.

Doctorate of Science Degree – Transfer Credits Maximum

Students pursuing a doctoral degree may transfer up to 16 semester credit hours from an appropriately accredited institution(s), which satisfy the subject matter, and curriculum requirements of the student's chosen program of study at Unmanned Vehicle University.

Type of Education or Training Program	Maximum Number of Transfer Credits Allowed
Certificate Program	4 Credits
Masters of Science Degree Program	8 Credits
Doctorate of Science Degree Program	16 Credits

Students may request to transfer credits upon enrollment in the first course of the students chosen program. Students need to provide appropriate documentation of the successfully completed course. Appropriate documentation includes official transcripts and a copy of the institution's catalog or syllabi describing the course(s) requested for transfer. A Student's tuition will be reduced upon acceptance of transfer credits.

**Transfer credit towards a program may be awarded for postsecondary courses completed by a student at other appropriately accredited institutions if such courses are found to meet the standards of Unmanned Vehicle University and the requirements of the specific program. Unmanned Vehicle University reserves the right to accept or reject any or all academic credits offered for transfer.*

Transfer Credit Evaluation

Unmanned Vehicle University evaluates extra-institutional learning and awards credit only in subject matter fields covered by the curriculum offered at Unmanned Vehicle University. All recognition for transfer credit and prior learning is evaluated by the Office of Admissions under the direction of qualified instructors in their area of subject matter expertise in collaboration with either the Dean of the School of Unmanned Technology or the Provost of the University.

Experiential Learning Credits

The University does not guarantee acceptance of experiential learning credits. However, Unmanned Vehicle University recognizes individuals may have significant real word experience that may be applicable, and offers prospective students an opportunity to apply for experiential credits to satisfy specific course requirements according to the following table.

Type of Education or Training Program	Maximum Number of Experiential Credits Allowed
Certificate Program	4 Credits
Masters of Science Degree Program	8 Credits
Doctorate of Science Degree Program	16 Credits

Note: the total credits awarded for combined transfer and experiential must not exceed the maximum transfer credits allowed which is 8/16/32 credits total for the Certificate/Masters/Doctorate Programs

Experiential Credit Evaluation

Unmanned Vehicle University evaluates and verifies significant real world experience and awards credit only in subject matter fields covered by the curriculum offered at Unmanned Vehicle University. All student requests for recognition for experiential credit are evaluated by the Dean of the School in which the credit is being applied for. To assist the Dean in the evaluation process, instructors who are highly qualified subject matter experts assist in evaluating and verifying the applicant's prior experience satisfies the requirements of the course where the credit is to be applied. In all cases, verifiable references are required to be provided. The University reserves the right to request the applicant to submit to an examination(s) to verify the appropriate knowledge levels of the applicant in a particular subject matter area. The applicant must pass these examinations with a score of 80% or better.

**Experiential credit towards a degree or certificate may be awarded for significant real world experience, if such experience is found to meet the standards of Unmanned Vehicle University and the requirements of the specific course and degree program. Unmanned Vehicle University reserves the right to accept or reject any or all requests for experiential credit by students based on the Dean's evaluation.*

Enrollment Process

Upon receipt of all admissions materials and payment of application fee, prospective students will be notified of their acceptance into the degree program by formal letter sent by email. After the admissions materials are reviewed the student will be contacted by email to communicate acceptance into the program. The enrollment agreement (also contained in Appendix 1) will need to be completed, signed and submitted to the University before the start of the first course.

Denial of Admission

An applicant may be denied admission if Unmanned Vehicle University determines that the university is unable to meet the educational needs and objectives of the applicant. If an applicant is denied admission, the application and enrollment fees will be refunded. After a one year waiting period, the student may apply again.

Enrollment Period

Once admitted to a graduate degree program or certificate program, students must complete their programs within maximum time periods. Doctoral students must complete the program in 6 years, Masters Students in 3 years and Certificate students in 1.5 years. If these time periods are exceeded, administrative withdrawal will be processed.

Withdrawal

Students seeking to officially withdraw from a degree program should notify Unmanned Vehicle University and request any applicable tuition refund. Students may notify the University of his or her intent to withdraw in any manner. The withdrawal procedure is as follows:

- The student may notify the university in any manner (writing is preferred) of his or her intent to withdraw from a degree program and request any applicable tuition refunds.
- Refunds, if any, will be issued according to the stated university policy as outlined in the student catalog and enrollment agreement.
- All remaining fees or tuition balances, subject to any offset for refund, must be paid in full at the time of withdrawal.
- The withdrawal will become official when the student receives final written notification from the Registrar.

Additionally, the university may initiate a student's withdrawal if there is a violation of satisfactory academic progress, conduct policy, or financial responsibilities.

Tuition

The estimated total cost for the Doctorate of Science Degree in Unmanned Vehicle Systems Engineering Program:
Tuition: $24,000 (over 3 years)
Fees/Books/Supplies $1,200
Total Program Costs $25,200
Tuition period is 3 years from the first enrollment date

The total cost for the Master of Science Degree in Unmanned Vehicle Systems Engineering Program:
Tuition: $14,400 (over 2 years)
Fees/Books/Supplies $900
Total Program Costs $15,300
Tuition period is 2 years from the first enrollment date

The total cost for the Certificate in Unmanned Vehicle Systems Project Management Program:
Tuition: $6,400 (over 1 year)
Fees/Books/Supplies $1,400
Total Program Costs $7,800
Tuition period is 1 year from the first enrollment date

Payment Method and Terms of Payment

(Payment to comply with R4-39-405)
1. Tuition deposit of $1600/$2400 (4 credit hours/6 credit hours) is due with signing of the enrollment agreement.
2. The student is required to pay $1600 for each four credit hour course and $2400 for each six credit hour course before the beginning of each course.
3. Payment methods accepted include cash, check, money order, and credit card.

Cancellation and Refund Policy

An applicant denied admission by Unmanned Vehicle University is entitled to a 100% refund.

Within Five-Day Cancellation prior to course commencement

An applicant who provides written notice of cancellation within five (5) days (excluding Saturday, Sunday, and federal or state holidays) of signing an enrollment agreement is entitled to a refund of all monies paid. No later than thirty (30) days after receiving the notice of cancellation, the University shall provide the student with a 100% refund of all monies paid.

Cancellation and Refund after the commencement of course

If for any reason a student chooses to withdraw from a program, Unmanned Vehicle University has established this refund policy for the student's protection. A student may terminate their enrollment at any time by notifying Unmanned Vehicle University in any manner (Email, FAX, or in writing, but in writing is preferred). Cancellations may be sent to:

Address: 1 East Washington Street, Suite 500, Phoenix, Arizona 85004
Telephone: 602.759.7372
Facsimile: 602.532.7672
Email: admissions@uxvuniversity.com
Website: www.uxvuniversity.com

Tuition charges/refunds:

Before the course begins, the student is entitled to a refund of 100% of tuition. After the course begins, tuition refunds (less the registration fee) is according to the following table:

Student Refund Policy

12 Week Courses	
Percentage (%) of weeks attempted	Student Tuition Refund Percentage*
10% or less	90%
More than 10% and less than or equal to 20%	80%
More than 20% and less than or equal to 30%	70%
More than 30% and less than or equal to 40%	60%
More than 40% and less than or equal to 50%	50%
More than 50%	No Refund is required

Refunds will be issued within 30 days of the date of student notification of cancellation, the date of University determination (withdrawn due to absences or other criteria as specified in the University catalog), or in the case of a student not returning from an authorized Leave of Absence (LOA), within 30 days of the date the student was scheduled to return from the LOA and did not return.

All books, supplies and fees are not refundable.

STUDENT GRIEVANCE PROCEDURE

Purpose: The primary objective of the UVU Student Grievance Procedure is to ensure that students are provided with the opportunity to present grievances to the University regarding a certain action or inaction by a member of the University community and that the University provides students with a consistent way of resolving grievances in a fair and just manner.

Informal Resolution

Prior to invoking the procedures described below, the student is strongly encouraged, but is not required, to discuss his or her grievance with the person alleged to have caused the grievance. The discussion should be held as soon as the student first becomes aware of the act or condition that is the basis of the grievance.

Review: If a student decides to file a grievance, he or she may present the grievance in writing to the Provost of the University. The student must submit the grievance within 45 calendar days after the student first became aware of the facts that caused the grievance. The Provost will conduct an investigation, make a determination and submit his or her decision in writing to the student and to the person alleged to have caused the grievance within ten calendar days of receipt of the grievance. The written determination shall include the reasons for the decision and indicate the remedial action to be taken, if any. If the complaint cannot be resolved with the student by the Provost, it will be elevated to the President for further evaluation.

If the complaint cannot be resolved after exhausting the institution's grievance procedure, the student may file a complaint with the Arizona State Board for Private Postsecondary Education. The student must contact the State Board for further details. The State Board address is:

Arizona State Board for Private Postsecondary Education
1400 W. Washington Street
Room 260,
Phoenix, AZ 85007
Phone # 602-542-5709
Website address: www.azppse.gov

Returned Check Policy

A charge of $25.00 will be incurred for all returned checks. Should a student have checks dishonored on more than two occasions, the university reserves the right to require payment by cashier's check, money order, or credit card.

Requesting Official Transcripts

To request an official transcript, complete the official transcript request form found on the university website and submit it to the university by email or mail accompanied by a $10.00 fee.

ACADEMIC PROGRESS

Satisfactory Academic Student Progress

It is the intent of Unmanned Vehicle University that its students make satisfactory progress toward his or her program objectives and achieve academic success. Satisfactory academic progress is monitored at the mid-point of each course. Students are required to maintain the following:

- Certificate students must maintain a cumulative 2.0 grade point average.

    - Certificate students are expected to complete their program in a maximum of one and a half years or prior to reaching 150% of the number of credits required for the program (36 semester credit hours).
- Master of Science degree students must maintain a cumulative 3.0 grade point average.
    - Master of Science students are expected to complete the degree program within 3 years.
- Doctoof Science degree students must maintain a cumulative 3.0 grade point average.
    - Graduate students are expected to complete doctoral degree academics in a minimum of three years and must complete the entire degree program (including acceptable dissertation defense) in a maximum of six years.
    - Doctoral students must graduate within three years after passing comprehensive examinations.

Course Time Limitation

Unmanned Vehicle University expects students to actively pursue their studies and regularly submit coursework. Once enrolled in a course, students have a maximum of twelve (12) weeks to finish all course requirements unless there are special extenuating circumstances that warrant an application for academic extension.

Academic Extension

Occasionally students encounter personal challenges or difficulties while enrolled at Unmanned Vehicle University which prevent them from completing all course requirements within a twelve (12) week period. Providing the student has completed most of the coursework an incomplete will be assessed. The student is expected to complete the coursework during the next term. If the student fails to complete the coursework in the succeeding term, the incomplete will be removed and replaced with a failing grade. The student can take the course again or replace with another course but will be required to pay tuition.

Inactive Status

In the event that the university fails to receive any coursework from a student within an eight (8) week period, he or she will be placed on inactive status. Inactive status in no way suspends any financial obligations students may have to the university. If a student chooses not to enroll in the next term course, they will be placed on an inactive status for up to one year. (The student is allowed to remain inactive as long as the student completes his program within the maximum time period).

Academic Probation and Suspension

If a certificate student's cumulative grade point average falls below 2.0 and if a graduate student's cumulative grade point average falls below 3.0 or if a student fails to make satisfactory progress, probation occurs. A student on academic probation has a maximum of one term to raise the cumulative average above the minimum standard, either by completing additional courses or repeating courses bearing inadequate grades, or completing the required coursework within the term time frame. When a course is repeated, the original grade is replaced by the subsequent course grade. The cost for repeating the course is determined by the current tuition schedule outlined on the enrollment agreement. Academic suspension will follow only if a student is unable to return to satisfactory progress within one term. Suspended students may apply for readmission to the university after a period of one year. Being placed on academic probation in no way suspends any financial obligations a student may have to the university.

Unmanned Vehicle University – Student Academic Conduct Policy

Unmanned Vehicle University is an academic distance learning community. Its fundamental purpose is the pursuit of knowledge. Like all other communities, the university can function properly only if its members adhere to clearly established goals and values. Essential to the fundamental purpose of the university is the commitment to the principles of truth and academic honesty. Accordingly, the Honor Code is designed to ensure that the principles of academic honesty are upheld. While all members of the university share this responsibility, the Honor Code is designed so that special responsibility for upholding the principle of academic honesty lies with the students.

Any of the following acts, when committed by a student, shall constitute academic dishonesty:

Cheating: intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

- Cheating of any kind.

Fabrication: intentional and unauthorized falsification or invention of any information or citation in an academic exercise.

- Falsification of any oral or written examination, record, assignment, or report.
- Representing oneself as another student for the purpose of taking an examination or allowing oneself to be represented by another for the same reason.
- Furnishing false or misleading information to university officials or on official records.
- Forging, altering, or misusing the university name, the name of university employees, documents, records, or identification.

Facilitating Academic Dishonesty: intentionally or knowingly helping or attempting to help another to violate any provision of the Honor Code.

- Collaborating with another student during an oral or written examination without permission.
- Collusion by obtaining or giving another student unauthorized assistance with coursework.
- Knowingly using, buying, selling, stealing, or soliciting contents of an oral or written examination, record, assignment, or report.
- Representing oneself as another student for the purpose of taking an examination or allowing oneself to be represented by another for the same reason.
- Using any technology to infringe upon the rights of others.
- Using technology (or verbally threatening to do so) to take any action which endangers or impairs the safety, health, life, or freedom of any person affiliated with Unmanned Vehicle University.
- If it is determined by a student's instructor or a staff member, that plagiarism has occurred; the student will receive a grade of XF (failure due to academic dishonesty).

Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

- Plagiarism (in any form).
- Using material not authorized by the university's curriculum to complete an assignment or oral and written examination without permission.
- Knowingly using, buying, selling, stealing, or soliciting contents of an oral or written examination, record, assignment, or report.

- If plagiarism re-occurs, the student's enrollment at Unmanned Vehicle University may be suspended.

Students must affirm to the following: I will adhere to high ethical standards in the pursuit of my education and to the best of my ability will:

- Conduct myself with professionalism, courtesy, and respect for others in all of my dealings with the university, instructors, administrators, staff, and other students.
- Present my qualifications and background truthfully and accurately for admission to the university.
- Observe the university policies and rules on submitting work, completing oral and written examinations, participating in discussions, and conducting research.
- Never turn in work that is not my own, or present another person's ideas or scholarship as my own.
- Never ask for, receive, or give unauthorized help on graded assignments, oral or written examinations.
- Never use outside books or papers which are unauthorized by the university's curriculum and instruction.
- Never divulge the content of assignments or oral and written examinations to fellow students.
- Never improperly use, destroy, forge, or alter the university's documents, transcripts, or other records.
- Never divulge my online university username or password.
- Always observe the recommended study schedule for my program of study.

Always report any violations of this Code of Conduct to the appropriate institution official, and report any evidence of cheating, plagiarism (in all forms), or improper conduct on the part of any student of the university when I have direct knowledge of these activities.

If it is determined that an act of academic dishonesty has occurred, a grade of XF is considered the normal sanction for students. The grade of XF is noted on the academic transcript as failure due to academic dishonesty. Lesser or more severe sanctions may be imposed when there are circumstances to warrant such a consideration. Dismissal from the university may be imposed even for a first offense.

Students not conducting themselves in a professional and courteous manner in the classroom environment or students who violate any policy of Unmanned Vehicle University may also be in breach of student responsibilities and subject to action up to and including dismissal from the university.

All students at Unmanned Vehicle University are expected to be honorable and observe standards of conduct appropriate to a community of scholars. The university promotes, as part of its mission and purpose, the development of men and women of integrity, strong character and responsibility. Honesty and dependable self-discipline are extremely important. Students must commit to satisfactorily completing all coursework within the required time frames. The university expects students to actively pursue their studies and regularly submit coursework. Students agree to fulfill all financial responsibilities to Unmanned Vehicle University.

GRADING POLICIES

Grading System

Unmanned Vehicle University uses the following system of grading:

A+	97-100	4.00
A	93-96	3.75
A-	92-90	3.50
B+	87-89	3.25
B	83-86	3.00
B-	80-82	2.75
C+	77-79	2.50
C	73-76	2.25
C-	70-72	2.00
D+	67-69	1.75
D	63-66	1.50
D-	60-62	1.25
F	Failure	0.00
I	Incomplete	
W	Withdrawal	
O	Audit	
XF	Academic Dishonesty	
CP	Complete	

Incomplete Grades

A mark of "I" (incomplete) is given by an instructor when a student completes a majority of the work (80%) but is unable to complete the course due to illness or other conditions beyond the student's control within the term. Students are required to arrange with the instructor for the completion of the course requirements within the next term of enrollment.

Policy on Grade Reports

Within two weeks after completion of a course a grade will be sent to the student.

Dissertation

A doctoral dissertation manual is provided to each student enrolled in the doctor of science degree program. The manual explains how to read and write and conduct research and provides a description of the format for reporting results. After passing a comprehensive exam, the student must first submit a proposal to the dissertation committee. After approval, the student works with his committee. The student meets periodically with the major professor to discuss work and progress. The major professor guides the student's interpretation by asking questions. The major professor provides guidance for future work. The importance of advancing the body of knowledge is emphasized during the dissertation research period. Students are encouraged to reference current technology developments to determine the applicability to their area of research. The major professor is also a source of information to provide current state of the art.

Graduation Requirements

In order to graduate, students of the Master of Science in Unmanned Vehicle Systems Engineering Program must have successfully completed the following requirements

- A minimum of 36 semester credit hours of course work
- A grade point average (GPA) of 3.0 out of 4.0
- A maximum of three years for completion of coursework

In order to graduate, students of the Doctor of Science in Unmanned Vehicle Systems Engineering Program must have successfully completed the following requirements

- A minimum of 60 semester credit hours of course work
- A grade point average (GPA) of 3.0 out of 4.0
- Pass a DSc qualifying exam after completing all coursework (typically within 3-4 years of initial enrollment)
- Submit and defend an acceptable dissertation
- A maximum of 6.00 years for completion of coursework and dissertation

Graduation

Degrees are conferred when all program requirements are satisfactorily completed. Students submit Intent to Graduate Form in their final term of enrollment. This form can be obtained from the Registrar's Office. Once the completed form has been received, the Registrar initiates a degree audit to confirm all program requirements have been or will be met upon completion of the final term.

UNIVERSITY POLICIES

Off-Campus Study

Unmanned Vehicle University does not require on-campus attendance. All coursework can be completed online through distance education.

Time Commitment for Degree Programs

UVU operates on a 4 term basis with each academic term being 12 weeks in duration. There is a one week break between any two terms as shown in the table below. Students may enroll and begin a graduate degree program or certificate program at Unmanned Vehicle University prior to or at the beginning of any academic term (Term 1, Term 2, Term 3, Term 4). The anticipated weekly time commitment is approximately 10-15 hours per week in a four credit course to make satisfactory academic progress through the requirements of the course.

Tax Deductible Educational Expense

While a personal accountant or Certified Public Accountant can best advise students regarding tax deductions, it is important to remember that the United States Code of Federal Regulations, Title 26, Section 1.162-5, Expenses for Education allows for personal income tax deduction of educational expenses including tuition, cost of travel, meals, lodging, etc., so long as they: 1) maintain or improve skills required by the individual in his employment or other trade or business, or 2) meet the express requirements of the individual's employer, or the requirements of applicable law or regulations, imposed as a condition to the retention by the individual of an established employment relationship, status, or rate of compensation.

Student Change of Mailing or Email Addresses

It is the responsibility of the student to notify the university with regard to any change of mailing or email addresses. All correspondence will be sent to the last mailing or email address the university receives from the student.

Student Privacy Rights

Unmanned Vehicle University honors the privacy of its students. In accordance with federal and state laws, the university protects the confidentiality of education records and the rights of students to inspect and review these records. Specific student transcript information is not available for general statistical purposes. Information which the university collects may be released only upon written request by the student.

Unmanned Vehicle University does not sell or rent any personal data which is submitted on its website to any third parties. The Family Educational Rights and Privacy Act (FERPA) allow students to access their educational records and limit the ability of others to access those records. This law is also sometimes called "the Buckley Amendment," after Senator Buckley, a sponsor of the original 1974 bill. Arizona has incorporated FERPA into its statute, A.R.S. § 15-141, governing the right to review educational records.

The Family Educational Rights and Privacy Act (FERPA) apply to all records which fall within its broad definition of "educational records." Student educational records at Unmanned Vehicle University include all records directly related to a student which are maintained by or for Unmanned Vehicle University. Records can be in any medium, including handwritten notes, paper files, e-mail, electronic files, video, or audio tapes. The records are not limited to those in "official" files and include records maintained in any Unmanned Vehicle University office or file. With limited exceptions, a student can see every educational record Unmanned Vehicle University has which is directly related to the student during normal business hours and when requested in advance.

Statement of Non-Discrimination

UVU does not discriminate in its admissions because of race, color, national or ethnic origin, age, religion, disability, sex, sexual orientation, gender identity and expression, veteran status (special disabled veterans, disabled veterans and Vietnam-era veterans), or any other characteristic protected under applicable federal or state law.

Accommodations for Students with Disabilities

Unmanned Vehicle University is an Equal Opportunity Educational institution and is committed to providing access to students with disabilities in accordance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act of 1990 (ADA).

Applicants, prospective students or current students with disabilities have the following rights and responsibilities:

- Have the right to equal access to all programs.
- Disability records will be maintained separately from academic records; disability records will be used solely to determine appropriate services.
- Have the responsibility to give advance notification of accommodations needed prior to the beginning of enrollment.
- Have the responsibility to submit both documentation of their disability and a request for services.

- Have the responsibility to initiate the request for services or accommodations; requests should be addressed to the Registrar; students must communicate to the Registrar the nature of the disability and any necessary and reasonable accommodations to allow them full participation in programs.
- Students must meet the requirements of the academic program of study with or without reasonable accommodation.

Students are encouraged to disclose and submit a special needs request for any disability requiring accommodation immediately following enrollment and prior to starting classes. Once the university's review has been completed and reasonable accommodations have been identified, an appropriate start date can be determined so the student can begin his or her chosen program. All students seeking accommodation under Section 504 of the Rehabilitation Act or the ADA must submit documentation of physical or mental disability from qualified medical or testing personnel. Expenses incurred in obtaining such documentation are the responsibility of the student.

English Language Requirement

Course materials are provided only in English. Students are expected to be proficient in the oral and written use of the English language. International students are subject to the same admission requirements, fees, and responsibilities as domestic students. International students are reminded that Unmanned Vehicle University provides course materials and instruction only in English. Oral and written proficiency of the English language is both presumed and required.

Job Placement Disclaimer

Unmanned Vehicle University does not guarantee job placement, advancement, or continued employment to graduates upon program/course completion or upon graduation. The university provides limited occupational assistance by referring students to Unmannedpower LLC. Unmannedpower LLC is an independent employment agency that focuses matching job seekers with potential employers in the Unmanned Systems job market. While Unmannedpower LLC offers limited employment assistance to graduates, there are no guarantees of employment made to any student by either Unmannedpower LLC or Unmanned Vehicle University LLC. Any arrangements students make with or through Unmanned Power LLC are completely independent of Unmanned Vehicle University.

Unmannedpower, LLC
P.O. Box 1597
Savannah, TN 38372
Tel: 713.212.8658

Instructors Conflict of Interest Policy

All instructors at Unmanned Vehicle University must be committed to conducting themselves in accordance with the highest standards of integrity and ethics. This includes identification of the potential for conflicts of interest and the assurances that participation by instructors in such activities does not improperly affect the university.

A conflict of interest occurs when an instructor is in a position to advance one's own interests or that of one's family or others, to the detriment of Unmanned Vehicle University. Instructors are required to disclose a situation which may constitute an actual or potential conflict of interest.

Intellectual Property Policy

Copyright privileges vest immediately with the author upon creation of the work, without requirement of notice or registration formalities. Thus, copyright vests with the author of a dissertation or thesis immediately upon creation of the work and no notice of copyright or formal registration is necessary. The United States Office of Copyright website also provides extensive information on all aspects of copyright law. Although notice of copyright and formal registration is not necessary, the university suggests that authors of theses and dissertations provide such notice. At Unmanned Vehicle University, the author may place notice of copyright on the title page of the dissertation. This can be accomplished simply by adding the word or symbol for copyright, the name of the student, and the year, e.g. "Copyright, James Unmanned 2015" or "© James Unmanned 2015" at the bottom of the title page. Students at Unmanned Vehicle University are advised that copyright applies to all dissertations, symbol or no symbol, and to consult and follow copyright law when using materials created by others.

Unmanned Vehicle University also recommends registration of copyright with the United States Copyright Office. Registration is required before an infringement lawsuit may be filed, and it grants the author the right to receive statutory damages and attorney's fees in an infringement action. The author may register a thesis or dissertation copyright directly with the United States Copyright Office. See the copyright registration page or the United States Copyright Office for more information. Unmanned Vehicle University makes no claims of ownership to a student's thesis or dissertation. As a condition of matriculation, the university reserves the right to make copies of dissertations or theses as needed for academic or archival purposes of the university.

Credit Hour Policy

Unmanned Vehicle University uses the federal definition of credit hour as follows:

Semester hours shall be equivalent to the commonly accepted and traditionally assigned units of academic measurement in accredited institutions. Academic degrees or academic credit-bearing distance learning courses are measured by the learning outcomes normally achieved through 45 hours of student work for one semester credit. This formula is typically referred to as a Carnegie Unit and is used by the American Council on Education in its Credit Recommendation Evaluation Criteria. One credit/semester hour is 15 hours of academic engagement and 30 hours of preparation. Since Unmanned Vehicle University uses a 12 week term with most courses being either 4 or 6 semester credits, a maximum of 60 hours of academic engagement and 120 hours of preparation is required. Student work includes direct or indirect instruction. Academic engagement may include but is not limited to submitting an academic assignment, listening to class lectures or webinars (synchronous or asynchronous), taking an exam, an interactive tutorial or computer assisted instruction, attending a study group that is assigned by the institution, contributing to an academic online discussion, initiating contact with an instructor to as a question about the academic subject studied in the course and laboratory work, externship or internship. Preparation is typically homework, such as reading and study time and completing assignments and projects. All student work must be documented in the curriculum materials and syllabi, including a reasonable approximation of time required for students to complete the assignments. Evaluation of students' work must be identified as a grading criterion and weighted appropriately in the determination of a final grade for a course.

Leave of Absence Policy

Students requesting a leave of absence (LOA) must notify the university by email or letter:

Unmanned Vehicle University
1 E Washington St Suite 500
Phoenix, AZ 85004
Ph.: 602-759-7372

From matriculation until graduation, graduate students at Unmanned Vehicle University are expected to maintain active status by continuously enrollment. Students who are not able to maintain active status are strongly encouraged to consult with their program, advisor, and Dean of his or her program to determine whether requesting a leave of absence (LOA) is the most appropriate course of action. Medical, personal, employment and military service are examples of situations that may lead a student to explore a leave of absence request. See university policies and guidelines below:

1. Students who experience circumstances that prevent them from maintaining active student status may be granted approval from the Graduate College for a leave of absence upon request. Students must complete a Leave of Absence form that specifies the length of the leave requested.

2. An approved leave of absence may not exceed one academic year, unless there are extremely exceptional circumstances.

3. Students who do not obtain an approved leave of absence prior to interrupting their enrollment (excluding summer) may be terminated from their graduate program and/or held to new requirements if they are subsequently readmitted.

4. Students granted a leave of absence may not use University facilities or services available only to enrolled students.

5. The approved leave of absence time will not be counted toward time-to-degree limits.

6. Students who obtain an approved leave of absence in accordance with this policy are eligible for reinstatement provided they register no later than the term immediately following the expiration of the leave (excluding summer). Programs may specify reasonable conditions for reinstatement to active status, whether the student returns early or at the expiration of the leave. Programs may deny reinstatement to active status based on crimes or other serious misconduct occurring during the leave that would have been grounds for suspension or expulsion had the student engaged in the conduct while enrolled. Students are obligated and agree to disclose such material information. See OSU Student Code of Conduct.

7. Students whose leave of absence has expired and who have not yet registered for the following term (excluding summer) will be placed on inactive status. Students who are placed on inactive status must reapply for readmission.

8. Given the diverse disciplinary and interdisciplinary nature of graduate degree programs, programs may develop additional rules governing leaves of absence, as long as they are consistent with Graduate College and University policies. Changes in such policies will be communicated via email and the university website.

Students that wish to be reenrolled must send a letter to the university requesting reenrollment. The letter must contain the following information:

Full name (please include maiden name)
Student identification number
Current address
Date of birth
Last date of attendance
Requested reenrollment date
Degree Program

The student will also be interviewed to ensure that, after an extensive leave, the student will likely be successful in the program if re-enrolled.

Policy on Probation, Suspension or Expulsion

Those who do not make satisfactory progress will be placed on probation during the succeeding session/quarter. During the probation period students must raise their grade average to passing or higher. The student will be suspended if grades are not satisfactory at the end of the probationary period.

Reinstatement to the University

Suspended students will be considered for reinstatement to the university after six months. If the student decides to retake a course, the most recent grade is counted in the GPA. A student is limited to a maximum of three attempts to pass a course (B or above). Withdrawals do count as an attempt.

Policy on Student Records

All student academic and financial records are maintained and filed in a secure and safe manner in perpetuity. Students are allowed to view their records, but the records must not leave the university. Official transcripts will be provided to the student for a fee of $5.00.

Should the institution cease operation, whether voluntarily or involuntarily, all educational records or legible true copies shall be filed with the Arizona State Board for Private Postsecondary Education within 15 days of ceasing educational operations.

Policies Concerning Student Attendance

Unmanned Vehicle University online courses are asynchronous and do not require student participation at a scheduled time. Students that are absent from a course 21 consecutive calendar days (excluding scheduled breaks) will be administratively withdrawn from the course.

PROGRAM REQUIREMENTS

Determination of Academic Requirements

Students graduate under the program requirements and policies in effect at the term and year of admission to a program. Students who fail to maintain continuous enrollment and are re-admitted to the program, graduate under the program requirements and policies in effect at the time of the new admission date.

Core Courses

The following courses are required for graduation:

Masters of Science in Unmanned (Air, Ground, Sea, Space) Vehicle Systems Engineering Degree

- One introductory course (i.e. UAV Fundamentals or equivalent UGV, UUV, USV)
- Remote Sensing with Unmanned Systems
- One Systems Engineering Course
- One 700 Level Math Course
- Three courses in an unmanned specialty area (air (UAV), ground (UGV), sea (UUV), space (USV))
- Choice of electives

Doctor of Science in Unmanned (Air, Ground, Sea, Space) Vehicle Systems Engineering Degree

- One introductory course (i.e. UAV Fundamentals or equivalent UGV, UUV, USV)
- Remote Sensing with Unmanned Systems
- Two Systems Engineering Courses
- One 700 Level Math Course
- Three courses in specialty area (air (UAV), ground (UGV), sea (UUV), space (USV))
- Choice of electives

Masters of Science in Unmanned Vehicle Systems Engineering

Example Masters in Unmanned (Air or Aerial) Vehicle Systems Engineering Curriculum

UAV 601: Unmanned Aircraft Systems Fundamentals	4 semester credit hours
MAT 701: Numerical Analysis	4 semester credit hours
UAV 801: UAV Aerodynamics and Flight Stability	6 semester credit hours
UXV 803: Autonomous Unmanned Systems	6 semester credit hours
SYS 601: UAV Systems Engineering and Project Management	4 semester credit hours
UXV 701: Remote Sensing with Unmanned Systems	4 semester credit hours
SYS 809: UAV Propulsion Methods and Selection	4 semester credit hours
UAV 702: UAV Developmental Flight Test and Evaluation	4 semester credit hours
Total Credit Hours:	36 semester credit hours

Example Masters in Unmanned (Ground) Vehicle Systems Engineering Curriculum

UGV 602: Unmanned Ground Systems Fundamentals	4 semester credit hours
MAT 701: Numerical Analysis	4 semester credit hours
UXV 606: Introduction to Robotics	4 semester credit hours
UGV 806: Advanced Motion Planning	4 semester credit hours
SYS 601: UAV Systems Engineering and Project Management	4 semester credit hours
UXV 701: Remote Sensing with Unmanned Systems	4 semester credit hours
UGV 707: Autonomous Intelligent Control Systems	4 semester credit hours
UXV 805: Human Robot Interaction	4 semester credit hours
UXV 807: Image Processing and Automatic Target Recognition	4 semester credit hours
Total Credit Hours:	36 semester credit hours

Master of Science in Unmanned Vehicle Systems Engineering Program Objectives

The main objective of the Master's Degree program is to equip the student with the extensive background required for present day professional unmanned systems engineering practice in industry. The study program is intended to provide the student with more depth and breadth in chosen fields of Unmanned Aircraft Systems Engineering. The curriculum is design, development, integration and management, and operation oriented to enable a graduate of the program to cope with and solve current and future Unmanned Systems Engineering problems.

Doctor of Science in Unmanned Vehicle Systems Engineering

A minimum of 60 semester credit hours of graduate-level coursework and comprehensive examination are required for the doctoral degree. A research proposal and dissertation is also required for the doctoral degree. The doctoral degree program is completed in no fewer than two years from the date of initial enrollment or no more than ten years from the date of initial enrollment.

Document Issued: Doctor of Science in Unmanned Vehicle Systems Engineering

Sample Doctor of Science in Unmanned Aerial Vehicle Systems Engineering Curriculum

UAV 601: Unmanned Aircraft Systems Fundamentals	4 semester credit hours
MAT 701: Numerical Analysis	4 semester credit hours
UAV 801: UAV Aerodynamics and Flight Stability	6 semester credit hours
UXV 803: Autonomous Unmanned Systems	6 semester credit hours
SYS 601: Systems Engineering & Project Management	4 semester credit hours
UXV 701: Remote Sensing with Unmanned Systems	4 semester credit hours
UAV 809: UAV Propulsion Systems	4 semester credit hours
UAV 605: UAV Laws, Regulations and Intellectual Property	4 semester credit hours
UAV 805: Human Machine Interface	4 semester credit hours
MAT 703: Linear Algebra	4 semester credit hours
SYS 702: Systems Engineering, Architecture and Design	4 semester credit hours
RES 901-903: Dissertation Research	12 semester credit hours
Total Credit Hours:	60 semester credit hours

Program Objectives

The doctoral program is designed to prepare teachers and leaders for industry in the new career field of unmanned systems engineering. The primary component is independent, directed research leading towards a dissertation. The Doctor of Science degree is focused on a single domain of unmanned vehicle (air, ground, sea and space); however, students are encouraged to take other domains to broaden their education. The degree requirements can be completed completely online using our online distance education course management or equivalent. Students must successfully complete 60 semester credit hours to complete this program.

Certificate in Unmanned Vehicle Systems Project Management

The Certificate in Unmanned Vehicle (Aircraft) Systems Project Management is for students who have not earned a bachelor's degree. Students are required to have earned a high school diploma.

Document Issued: Certificate in Unmanned Vehicle Systems Project Management

Program Objectives
The objective of the Certificate program is to provide current and future project managers with an understanding of the technical characteristics of unmanned vehicle systems and the concepts, principles, and issues associated with planning and managing an unmanned systems project in an active, flexible learning environment. The project management course includes preparation for the Certified Associate in Project Management (CAPM) certification by the Project Management Institute (PMI). PMI certification formally recognizes an individual's competency in the project management process and is widely acknowledged as a significant accomplishment by practitioners in the field.

UNIVERSITY ADMINISTRATION

Board of Directors

Mr. Mark Wilkins, Phone: (602) 759-7372, Email: admissions@uxvuniversity.com

Mr. Kevin Kelly, Phone: (602) 759-7372, Email: admissions@uxvuniversity.com

University Management and Administration

Mr. Kevin Kelly, President, Phone: (602) 759-7372, Email: admissions@uxvuniversity.com

Mr. John L. Minor, Provost, Phone: (602) 759-7372, Email: john.minor@uxvuniversity.com

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Fred Bivetto, Lt Col, USAF (Ret), Dean – School of Unmanned Technology, Phone: (602) 759-7372, Email: FBivetto@uxvuniversity.com

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Mr. Josh Roetzer, **Enrollment Advisor and Business Development Manager**, Phone: (716), 866-2827 or (602) 759-7372, Email: JRoetzer@uxvuniversity.com

UNIVERSITY FACULTY & INSTRUCTORS

Dr. Robert Finkelstein

Adjunct Faculty, President of Robotic Technology Inc.

Dr. Finkelstein has more than 40 years of experience in: intelligent systems and robotic vehicles; military and civil systems analysis; operations research; business development; technology assessment and forecasting. Dr. Finkelstein earned a Doctorate in the primary field of Systems Theory and Cybernetics and the supporting field of the Management of Science, Technology, and Innovation, the George Washington University (GWU, 1995); Ap.Sci. (Applied Scientist degree) in Operations Research (GWU, 1977); M.S. in Operations Research (GWU, 1974); M.S. in Physics (University of Massachusetts, 1966); B.A. in Physics (Temple University, 1964). Also: Diplomas from the U.S. Army Missile School (1967) and U.S. Army Ordnance School (1966); Certificates from the University of Tennessee Space Institute (Combat Obscuration Modeling, 1978) and University of California, Los Angeles (Battlefield Robotics, 1983), and post-graduate courses in Physics at MIT (1968-1970). As President of Robotic Technology Inc. (RTI) from 1985 to the present, Dr. Finkelstein is responsible for technical analyses, technology assessments and forecasts, operations research, business development, and other professional services, for government and industry – nationally and internationally – in military and civil advanced technology systems, especially robotics, unmanned vehicles, and intelligent systems. Dr. Finkelstein is the inventor (patent pending) of the Energetically Autonomous Tactical Robot (EATR), which was developed under sponsorship of the Defense Advanced Research Projects Agency (DARPA). He is Collegiate Professor for the University of Maryland University College, Graduate School of Management and Technology, and he received the 2010 UMUC Teaching Recognition Award. He is also Co-Director of the Intelligent Systems Laboratory in the Center for Technology and Systems Management in the University Of Maryland Clark School Of Engineering. Previously he served as a U.S. Army Ordnance Officer in Missile Intelligence. Dr. Finkelstein has authored more than 200 technical reports and studies. He contributed articles to numerous publications and wrote a quarterly column and served on the Editorial Board for "Unmanned Systems" and Board of Directors for the Association for Unmanned Vehicle Systems International. His books include Unmanned Vehicle Systems: Military and Civil Robots for the 21st Century and Beyond, Pasha Publications (1994), Defense Year-Book 1992 ("Combat Robotics: From the Kaiser to the New World Order"), Brassey's Publications, and "Military and Civil Robotics: Intelligent Machines in War and Peace," IGI Global Publishers (to be published in 2012). We welcome Dr Finkelstein as our expert in robotics and systems engineering. Dr Finkelstein teaches the UGV 707 Autonomous Intelligent Control Systems.

Dr. Pascual Marqués

Adjunct Faculty, President of Marques Aviation Ltd (UK)

Dr. Marqués holds an MPhil and a PhD in Engineering Mechanics. He is the President at Marques Aviation Ltd in the United Kingdom and the International Director (UK) of Unmanned Vehicle

University. At Marques Aviation Ltd, Dr Marqués oversees the design, R&D, manufacture of the MA THOR unmanned aircraft series. The research interests of Dr Marqués are in the fields of Aerodynamics at low Reynolds numbers and Flight Stability and he has published extensively in these areas. Recent projects involve the implementation of theoretical aerodynamics for the design of low aspect ratio wings for applications in UAV engineering using numerical analysis, computer aided engineering (CAE) and computational fluid dynamics (CFD). Wing aerodynamic efficiency in UAVs is optimized by adjustment of wing planform to enhance Oswald efficiency, incorporation of flow control devices, modification of tip vortex and wake configuration, and application of optimized geometric and/or aerodynamic twist. Flight stability of the air vehicle is enhanced using principles of aeroelasticity, adaptive wing technology and automated flight control. Dr Marqués is the Editor in Chief of the International Journal of Unmanned Systems Engineering (IJUSEng). He is the Chair of the World Congress on Unmanned Systems Engineering (WUEng) and the International Aerospace Engineering Conference (IAEC). Dr. Marqués regularly presents the latest research in aerodynamic optimization at other international congresses; the most recent include the Australian International Aerospace Congress (Melbourne, Australia), the Pan American Congress on Applied Mechanics (Port-of-Spain, Trinidad & Tobago), and the Maui International Engineering Education Conference (Maui, Hawaii, USA).

Dr. Eileen Bjorkman

Adjunct Professor, Systems Engineering & Flight Test Expert

Dr. Eileen A. Bjorkman, PhD, has more than thirty years' experience with the Department of the Air Force, both as an active duty officer and civilian. She has held numerous positions as a flight test engineer, commander, director, staff officer, and senior advisor for both technical and policy issues within the Air Force and Department of Defense. Her primary areas of expertise include flight test engineering, systems engineering, application of statistical methods to flight testing, risk management, modeling and simulation, leadership, human resource management, public policy, and strategic planning. Dr. Bjorkman has a B.S. in Computer Science from the University of Washington in Seattle and both B.S. and M.S. degrees in Aeronautical Engineering from the Air Force Institute of Technology at Wright-Patterson Air Force Base, Ohio. She is a flight test engineer graduate of the United States Air Force Test Pilot School, where she was also an instructor for two years, teaching classes in instrumentation, flight control systems, and navigation systems. She also taught undergraduate computer science and electrical engineering courses at Chapman College (now University), along with multiple graduate-level tutorials in test planning and statistics. She received her PhD in Systems Engineering from the George Washington University in August 2012 and has more than forty published journal articles and conference presentations.

Elena Spiridon (PhD imminent)

Adjunct Faculty, Psychology, Man-Machine Interface Expert

Ms. Spiridon regularly teaches Psychology, Psycho-physiology and Research Methods at Liverpool John Moores University, Edge Hill University and Hugh Baird College in the United Kingdom. Completion of her PhD in Psychology at Liverpool John Moores University is imminent. Elena was awarded her BSc (Hons) in Psychology (Grade: First Class) by the University of Lancashire, for which she was also granted the GBR British Psychological Society Award for the student with the highest average mark. Elena's research interests are in the field of Psycho-physiology and Human-machine interaction and she has participated in World-class research projects. In particular, her PhD research at Liverpool John Moores University is funded by the European Commission within the 7th Framework Programme (FP7) as part of the REFLECT project. The overall aim of the doctoral research program is to develop a prototype biocybernetic system that accurately measures affective-motivational states via Psycho-physiology and provides feedback to the user in real-time. The work focuses on identifying cardiovascular and electroencephalography-based indicators of anger, in combination with levels of control, towards the development of a cybernetic loop that offers the possibility to self-regulate negative valence Psycho-physiological reactions. Elena has published her work extensively in leading Psycho-physiology, Biological Psychology, Affective Computing, and Intelligent Interaction journals. Another area of research interest is the application of Psycho-physiology and concepts of Human-machine interaction in the development of the UAV ground control station. Elena is also the Director of Marketing at Marques Aviation Ltd and participates in the R&D and promotional programs of the MA THOR unmanned aircraft series. Elena is a member of the Conference Scientific Committee for the World Congress on Unmanned Systems Engineering (WUEng) and the International Aerospace Engineering Conference (IAEC). She teaches the UXV 805 Human-Machine Interaction course at Unmanned Vehicle University.

Dr. Mikel Miller

Adjunct Faculty, Navigation Systems Expert

Dr. Mikel M. Miller, a member of the scientific and professional cadre of senior executives, is Chief Scientist, Munitions Directorate, Air Force Research Laboratory, Eglin Air Force Base, Fla. He is the Directorate's principal scientific and technical advisor and primary authority for the technical direction of a broad, multi-disciplinary research and development portfolio encompassing all aspects of munitions science and technology.

Dr. Miller was born in Sioux City, Iowa. He earned his Air Force commission as a distinguished graduate of the Reserve Officer Training Corps program in 1982 from North Dakota State University. He began his career as a satellite systems engineer assigned to the 1000th Satellite Operations Group at Offutt AFB, Neb. Throughout his active-duty career he held numerous test, research and development, and program management positions. After earning his Ph.D., he served as an assistant professor of electrical engineering at the Air Force Institute of Technology until his retirement from the Air Force as a lieutenant colonel in 2003. Most recently, Dr. Miller served as the Chief Scientist, Munitions Directorate, Air Force Research Laboratory, Eglin AFB, Fla.

Over his career, Dr. Miller has authored/co-authored more than 60 journal articles, technical papers, and documents and a NATO handbook on navigation technologies. Dr. Miller is a Fellow of the Institute of Navigation (ION) and a Past President. In addition, he served a 2-year term as the Chairman of the Joint Service Data Exchange (JSDE). He is also a Fellow of the Royal Institute of Navigation (RIN), and a member of the Institute of Electrical and Electronic Engineering (IEEE), and American Institute of Aeronautics and Astronautics (AIAA). Dr. Miller is also an Adjunct Professor of Electrical Engineering at AFIT and Miami University of Ohio as well as Unmanned Vehicle University. Dr. Miller was appointed as a senior executive in June 2010.

Dr Miller's educational credentials include:

-1982 Bachelor of Science degree in electrical and electronics engineering, North Dakota State University

-1987 Master of Science degree in electrical engineering, Air Force Institute of Technology, Wright-Patterson AFB, Ohio

-1998 Doctor of Philosophy degree in electrical engineering, Air Force Institute of Technology, Wright-Patterson AFB, Ohio

Dr. Scott Nowlin (Colonel, USAF Retired)

Adjunct Faculty, Modeling, Simulation & Analysis Group Manager for BAE Systems – Intelligence and Security – GBSD ISC

Dr. Scott R. "Scotty" Nowlin is the Modeling, Simulation & Analysis Group Manager for BAE Systems – Intelligence and Security – GBSD ISC. Previously he was the Deputy Director of Engineering and Technical Management, Air Force Sustainment Center (AFSC) Operating Location Hill Air Force Base, Utah. He developed, implemented and oversaw technical policies, processes, databases, and goals/standards for the scientist and engineering workforce at Hill AFB and other resident AFSC and Air Force Life Cycle Management Center offices, to include System Program Offices (SPOs). He provided executive leadership and technical direction for an

engineering and scientific workforce of nearly 2000 science and engineering professionals supporting the Ogden Air Logistics Complex's mission. Dr Nowlin earned his BS in Aeronautical Engineering from the USAF Academy, his Masters of Science in Aeronautical Engineering from the University of Texas, Austin, and his Doctor or Philosophy Degree from Oxford University in the United Kingdom with an emphaisis in aircraft propulsion systems.

Dr Maarten Uijt se Haag

Adjunct Faculty, Navigation Systems Expert

Maarten Uijt de Haag is the Edmund K. Cheng Professor of Electrical Engineering and Computer Science and a Principal Investigator (PI) with the Avionics Engineering Center at Ohio University since 1999. He obtained his M.S.E.E. degree from Delft University in The Netherlands in 1994 and a Ph.D. in Electrical Engineering from Ohio University in Athens, Ohio in 1999. He has taught on various subjects such as Inertial Navigations Systems (INS), radio navigation systems, integrated navigation systems, GPS, target tracking, and aviation standards and software certification.

Maarten Uijt de Haag has been involved with navigation-related research since 1992. He has worked on the development of GNSS software radios and advanced GNSS processing techniques for low carrier-to-noise ratio tracking, high dynamic tracking, and interference mitigation, the Ground-Based Augmentation System (GBAS), GPS/INS Integration, and MLS/GPS integration. More recently, he has been involved in the use of GPS for Synthetic Vision Systems, terrain referenced navigation and tracking systems, fault detection and isolation techniques, analysis and flight testing of Inertial/GPS for navigation and attitude, indoor positioning, laser- and vision-based navigation for aerial and ground vehicles, ADS-B, and hazard monitors for alerting and notification as part of flight deck systems.

Maarten Uijt de Haag has lectured extensively throughout the United States and Europe for organizations including The International Society for Optical Engineering (SPIE), The Institute of Navigation (ION), the Institute of Electrical and Electronics Engineers (IEEE), the American Institute of Aeronautics and Astronautics (AIAA), the Polytechnical University of Catalonia (UPC), and the NATO Research and Technology Organization.

Maarten Uijt de Haag has authored or co-authored over 100 navigation-related publications. He co-authored four book chapters and was editor of the ION Redbook on Integrated Systems.

Maarten Uijt de Haag is a Senior Member of the IEEE, an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA), and a member of the SPIE and ION. He is an Associate Editor for NAVIGATION: The Journal of the Institute of Navigation, has served on the Council of the ION for a number of years, and is currently a member of the AIAA Digital Avionics Technical Committee (DATC). Maarten Uijt de Haag was awarded the 2008 Institute of Navigation Colonel Thomas L. Thurlow Award for his contributions to laser-based navigation and integrity monitors for synthetic vision systems.

John Sauter

Adjunct Faculty, Program Manager, Soar Technology Inc. Autonomous Systems Expert

Mr. Sauter is a Program Manager for Autonomous Systems at Soar Technology, Inc. where he leads research and development efforts in robotics and unmanned systems. He has over 30 years of experience in research and development in automation and autonomous systems. This group has established an international reputation for its pioneering work in stigmergic algorithms using fine-grained agent-based systems for unmanned systems. John has over 25 years' experience in research and development using fine-grained agent-based methods for modeling and control of complex systems ranging from swarming air vehicle control to distributed information analytics for massive data. He has led Jacob's research in swarming unmanned vehicle control over the last thirteen years. John served as project manager and principal investigator on a number of defense studies and demonstrations of advanced unmanned systems. He managed the DARPA JFACC program to develop an adaptive air planning application in complex, dynamic threat environments. He led the OSD NII study to evaluate Jacob's novel stigmergic swarming algorithms in several full scale simulation experiments run by the Space and Missile Defense Battle Lab. He led the team that successfully demonstrated the use of swarming algorithms controlling multiple ground and air vehicles in several tests held at Aberdeen Proving Grounds in 2004 and later at NASA's Wallops Island in 2007 and 2009. He has also led projects in studying the effectiveness of swarming unmanned systems for several military applications including persistent surveillance, target tracking, fast boat surveillance, and perimeter protection. He is the author of over 25 papers and holds three patents using agent-based technologies for the analysis and control of a wide range of systems. Mr Sauter teaches the UXV 803 Unmanned Systems Autonomy Course

Dr. Emaid A. Abdul Retha

Adjunct Faculty, UAV Propulsion Expert

Dr. Emaid A. Abdul-Retha holds the BS, MS and PhD degrees in aeronautical engineering. His research areas include jet engine automatic control systems and modeling of gas turbine engines. He has over 34 years of aviation experience including 20 years' experience with unmanned aircraft vehicles. He has been a chief engineer for ten years working on modifications to the MiG-21 and MiG 29 jet fighter aircraft. Dr. Abdul-Retha has supervised several research centers and projects related to aviation and unmanned aircraft. He has performed research on many different types of aircraft (fighter, transport, helicopter, agriculture, light, general aviation. etc.). He led a development effort to modify the MIG 29 jet fighter with drop fuel tanks and an inflight refueling system. His research efforts have also led to an increase in helicopter engine power in hot climates. He has also conducted research in air defense operations and fighter tactics against attacking missiles and UAV's. His research related to unmanned aerial vehicles includes the design, manufacture, integration and testing of many different types (fixed wing UAV, VTOL UAV, jet powered UAV). He has also has led research activities in unmanned ground vehicles (UGVs) and unmanned surface vehicles (USVs). In 2003 he was a research fellow for UAV automatic control systems at the National Aerospace University in Kharkov, Ukraine. He returned to the university in 2007 as an advisor to the small unmanned aircraft vehicle research program. From 2008 to 2010 he provided consulting services for the King Abdullah Design and Development Bureau (KADDB) in Jordan where he managed a VTOL UAV research program. He is presently the R&D director at Jordan Aerospace industries (JAI) and has established a comprehensive UAV program in Jordan. He is a member of the board of directors at Jordan Advance Remote Systems (JARS), a company that specializes in UAV's. Dr Abdul-Retha teaches the UAV propulsion Methods and Selection Course.

Dr. Timothy Jorris (Lt Col, USAF)

Adjunct Faculty, Unmanned Space Systems, Hypersonic Flight, Design of Experiments and Statistics Expert

Dr. Timothy Jorris received his B.S. and M.S. in Aerospace Engineering from the University of California, Los Angeles. He received his doctorate in Astronautical Engineering from the Air Force Institute of Technology (AFIT). His research interests are trajectory optimization, hypersonic vehicle flight test, unmanned systems, and statistics/Design of Experiments. He is a US Air Force Test Pilot School Flight Test Engineer graduate, and later returned as an Instructor for 4 years. There he earned the Outstanding Academic Instructor of the Year award. Dr. Jorris is a Senior Member of both SFTE and AIAA, and is the 2014 SFTE Antelope Valley Chapter President. SFTE

awarded Dr. Jorris the "Kelly" Johnson Annual Outstanding Achievement in the Field of Flight Test Engineering Award in 2011. During his 20-year career in the US Air Force, Dr. Jorris has worked on the X-37, X-40A, X-33, F-15I, B-1, B-52, Global Hawk, X-51A, HTV-2, and Dream Chaser; he is currently the Director of the Hypersonic Combined Test Force at Edwards AFB. He received the Outstanding Science and Engineering Educator Award by Air Force Materiel Command in 2014. He is an Adjunct Professor for AFIT, Unmanned Vehicle University, and a Lecturer at the Lancaster University Center for California State University, Long Beach (CSULB).

Fred Bivetto, Lt Col, USAF (Ret)

Faculty Member, UAV Test Pilot / UAV Flight Test Expert

Lt Col (Ret) Frederick C. Bivetto was the Director of Curriculum Standards and Chief Remotely Piloted Aircraft (RPA) training at the USAF Test Pilot School, Edwards AFB. Mr Bivetto holds a BS in Mechanical Engineering and a Master's Degree in National Security. He was responsible for the development and maintenance of a $37M, 1200 hour, Master of Science accredited flight test curricula with over 23 years of engineering, aviation and project management experience. In addition to managing the pilot, navigator/combat systems officer and flight test engineer curricula; he was initial cadre for the development of the experimental Unmanned Aerial Vehicle (UAV)/Remotely Piloted Aircraft (RPA) test pilot curriculum and the school's first Chief UAV/RPA test pilot.

He began his Air Force career as an airborne Mission Commander and aeronautical engineer on the EC-135E / EC-18B Advanced Range Instrumentation Aircraft (ARIA). He led numerous missions to worldwide remote locations for Navy Trident ballistic missile re-entry tests, cruise missile chases and space launches (from DIRECTV to the SPACE SHUTTLE). He then went off to specialized & joint undergraduate navigator training, earning an academic excellence award and the wings of a weapon systems officer (WSO) and electronic warfare officer (EWO) flying the B-1. During his operational career he was a bomb squadron Chief of Standardization/Evaluation, Flight Commander and Top Graduate of the B-1 Centralized Flight Instructor Course. He is a multiple combat veteran of Iraq's OPERATION DESERT FOX and Afghanistan's OPERATION ENDURING FREEDOM with 240 combat flight hours. While deployed for OPERATION ENDURING FREEDOM he was selected for the prestigious USAF TPS special flying program and graduated with the Ellison A. Onizuka "Propwash" Award.

During his flight test career he was an Instructor Experimental Flight Test B-1 WSO/EWO, Airborne Laser (YAL-1A) Flight Commander, Joint Unmanned Combat Air System (J-UCAS/X-45) & Global Hawk (RQ-4A/B) Assistant Director of Operations, Operations Officer of a Presidentially-directed unit, Predator (MQ-1) & Reaper (MQ-9) Detachment Commander, Nellis Test and Training Range Squadron Commander and Operations Group Deputy Commander (Experimental Flight Test F-16 WSO & other systems).

He has accumulated an impressive and diverse series of firsts for the Air Force: first B-1 combat mission (OPERATION DESERT FOX), led first B-1 mission for night one of OPERATION ENDURING FREEDOM, first B-1 launch of the Joint Standoff Weapon (JSOW), Laser Weapon Officer for first integrated Airborne Laser systems test, first dual-qualified UAV/RPA test pilot (Global Hawk and Predator), flew first Navy Global Hawk cross-country and the first Predator Viper Strike munition test sortie.

Lt Colonel Bivetto is a master aviator, UAV/RPA test pilot & commercial, single/multi-engine, instrument pilot and CFI with over 2,500 flight hours in 30 different aircraft. Fred teaches the Test & Evaluation (UAV702) course and the UAV Fundamentals (UAV301/601) course/seminar series.

Dr. Robert Jacobs

Adjunct Faculty, Systems Engineering Expert, CEO of Illusion Engineering Inc.

Dr. Robert S. Jacobs holds a BS in Systems Engineering from UCLA, an MS in Management Science/Operations Research from USC, and a Ph.D. in Engineering Psychology/Human Factors from the University of Illinois. His graduate research at the University of Illinois Aviation Research Laboratory addressed the role of simulator motion cues on transfer effectiveness in primary flight training. He has over 35 years of experience in aerospace and defense engineering, including technical, program, and executive management positions with Hughes Aircraft, Illusion Engineering, The Institute for Defense Analyses, and Perceptronics Solutions Inc. He has consulted extensively with various government agency and aerospace industry clients, including an extended relationship with Aerovironment Inc. His professional work has focused on system engineering support of man-machine system development, including human machine interface design, simulation for engineering development and training, and artificial intelligence for crew system decision aiding and automation.

Dr. Jacobs was a principal stakeholder in the development of the first large-scale distributed military simulation system – DARPA's SIMNET program – during which he oversaw the design,

production, fielding, and operations of 236 networked full crew combat simulators installed at 13 US Army training sites around the world. As founder and CEO of Illusion Engineering Inc., Dr. Jacobs managed the development of a number of very sophisticated simulation systems for military and entertainment application, including networks of Indy, NASCAR, and parachute jumping simulators installed at high-end recreational facilities worldwide. With the Institute for Defense Analyses, he was a principal architect of the US Army's Future Combat System embedded simulation capability that provided virtual combat training integral to all of the manned combat platforms in that system of systems. Dr. Jacobs has been responsible for design and system engineering of UAV ground control stations, command and control protocol, and UAV payload integration, and has managed numerous studies to incorporate artificial intelligence and intelligent agent technology into UAS ground control stations to enable single operators to provide supervisory control of multiple unmanned platforms. He is an experienced commercial pilot and former certified flight instructor with over 1500 hours of multi-engine, instrument, and glider flight time, and over 2500 hours of simulator instruction logged. Dr Jacobs teaches the SYS 601 UAV Systems Engineering and Project Management Course.

John Minor

Provost of UVU, Expert in UAV Systems, UAS Flight Test and UAS Remote Sensing

Mr. John Minor is the Provost of Unmanned Vehicle University (UVU). As one of the founding members of the University, He previously served on the UVU Board of Directors and as a UVU Regional Director for the Mountain West Region.

As Provost, he is responsible for all aspects of the academic mission to include academic curricula and personnel, unmanned flight training/instruction, and unmanned systems research programs. He collaborates with UVU owners to ensure the mission, vision, and goals of the university are met. Mr. Minor oversees the departmental efforts of the University's three Deans: Dean of the School of Unmanned Systems Technology, Dean of the School of Flight Training, and Dean of Research Programs and Academic Affairs. Prior to becoming Provost for Unmanned Vehicle University, Mr. Minor owned and operated American Eagle Aerospace LLC and was the Division Chief for the Air Force Sustainment Center's Scientist and Engineer Strategic Workforce Management and Development Division, Ogden Air Logistics Center, Engineering Directorate, Hill Air Force Base, Utah. Prior to that, he served as the Chief of the Systems Engineering Division for Hill AFB.

Mr. Minor has 40+ years of professional experience and retired from the US Department of the Air Force after serving 28 years in both military and civilian capacities. He is an internationally

recognized subject matter expert on airborne remote sensing, airborne sensors and systems, unmanned aerial vehicles (UAVs) and UAV systems, systems engineering, and flight test and evaluation. He is a highly decorated academic leader, instructor and lecturer. He is the former Technical Director of the USAF Test Pilot School. In this capacity he was responsible for executing a 50 semester hour graduate level program graduating 48 student test pilots and test engineers a year with a Master of Science in Flight Test Engineering as well as overseeing a 4000 hour annual test flying training program. From 2006 to 2008 he led the efforts to get the USAF Test Pilot School academically recognized, accredited and approved by the US Department of Education, the National Advisory Committee on Institutional Quality and Integrity (NACIQI) and the Southern Association of Colleges and Schools for degree granting authority under USC Title 10, a first in the 63 year history of the military school.

During his career, Minor served on the technical staff of the Air Force Flight Test Center, the USAF Test Pilot School, the 46th Test Wing, Lockheed Martin, the Lockheed Skunk Works®, Loral, and Sverdrup Technology. He began his career with the 9th Strategic Reconnaissance Wing as a sensor system specialist on the SR-71 and U-2 aircraft. Since, he has worked on a number of high-value military programs to include the Low Altitude Navigation and Targeting Infrared for Night (LANTIRN), the F/A-18D (RC) Tactical Reconnaissance (TAC RECCE), the Advanced Tactical Air Reconnaissance System (ATARS), and the RQ-3A TIER III Minus (DarkStar) High Altitude, Low Observable, Endurance, Unmanned Air Vehicle (UAV), as well as numerous other classified manned and unmanned system programs.

Mr. Minor is a senior flight test engineer and he accumulated over 1500 flying hours in over 30 different aircraft types, including 400+ hours in the RF-4C and 300+ hours in the F-16B/D. As a USAF Test Pilot School's former Systems Master Instructor (1999-2003), he was responsible for developing a state of the art curricula and teaching sensors, weapons, systems, electronic warfare, directed energy, and unmanned systems theory, operations, and flight test to the next generation of USAF Test Pilots, Electronic Warfare Officers, and Flight Test Engineers. He has taught many short courses around the world for Society of Flight Test Engineers, the Association of Old Crows (AOC), Technology Training Corporation, and has lectured extensively throughout Europe to several Technical Universities and for the Royal Aeronautical Society (RAeS). Mr. Minor holds BSEE and MSEE degrees "with distinction" from the University of New Mexico under Air Force Institute of Technology sponsorship. He is an Air War College and USAF Test Pilot School graduate.

Mr. Minor has been honored with numerous awards and decorations to include: the Civilian Meritorious Service Medal, the 412th Test Wing's Senior Leader of the Year Award, the Society of Flight Test Engineers Directors and Fellow Awards, the San Fernando Valley Engineers' Council Distinguished Engineering Project Achievement Award, and the Engineers' Council Distinguished

Engineering Life Achievement Award for his educational contributions to the Edwards AFB engineering community. In 2010 he was honored to receive the “Kelly” Johnson Award for obtaining “Engineering Excellence” throughout his 35-year career by the Society of Flight Test Engineers. John received the Team Hill AFB “Spirit Award” in 2011, and in 2014 he was honored to be selected as the IEEE Senior Engineering Manager of the Year for Region 6, Utah and Idaho.

Mr Minor is a member of the following professional organizations: the Association for Unmanned Vehicle Systems International (AUVSI), Fellow of the Society of Flight Test Engineers, (SFTE), Senior Member of the Institute of Electrical and Electronic Engineers (IEEE) , the International Test and Evaluation Association (ITEA) , Senior Member of the American Institute for Aeronautics and Astronautics (AIAA), the International Council on Systems Engineering (INCOSE), the Air Force Association (AFA), and the Flight Test Historical Foundation. He was the President of the Society of Flight Test Engineers from 2004-2006. Mr. Minor also has been inducted to the following science and engineering honor societies: Eta Kappa Nu – The Electrical and Computer Engineering Honor Society, Tau Beta Pi – The Engineering Honor Society, and Kappa Mu Epsilon – the Mathematics Honor Society.

Dr. Randall W. Beard

Adjunct Faculty, Micro Air Vehicle Expert, Unmanned Systems Expert

Dr. Randal W. Beard received a Ph.D. degree in Electrical Engineering in 1995 from Rensselaer Polytechnic Institute Troy in New York. Since 1996, he has been with the Electrical and Computer Engineering Department at Brigham Young University in Provo, Utah, where he is currently a professor. In 1997 and 1998, he was a Summer Faculty Fellow at the Jet Propulsion Laboratory, California Institute of Technology in Pasadena, California. From 2006-2007 he was a National Research Council Fellow at the Air Force Research Labs at Eglin Air Force Base, Fort Walton Beach, Florida, where he worked on vision based guidance and control algorithms for micro air vehicles. His primary research focus is in autonomous systems, unmanned air vehicles, and multiple vehicle coordination and control. He has published over 130 peer-reviewed articles and has received funding from AFOSR, AFRL, NASA, DARPA, and NSF. He is a senior member of the IEEE and the AIAA and is currently an associate editor for the IEEE Transactions on Automatic Control. In 1998 and 2004 he was voted the outstanding teacher in the BYU Electrical and Computer Engineering Department by graduating seniors. In 2004 he was awarded the BYU Young Scholar Award and in 2006 he was awarded the BYU Technology Transfer Award. In 2009 he was awarded the Karl G. Maeser Research and Creative Arts Award for excellence in research. His students have won numerous competitions and awards for their work on micro air vehicles. He was one of the principle designers of the Kestrel autopilot system, which was licensed to

Procerus Technologies in 2004, and acquired by Lockheed Martin in 2012. He is the co-author of the textbook Small Unmanned Aircraft: Theory and Practice, published by Princeton University Press in 2012.

Dr. Crissie M. Jameson

Faculty Member, Dean of Academic Affairs and Research, Subject Matter Expert in Higher Education, Research, and Accreditation

Dr. Crissie M. Jameson has worked in higher education for over 10 years. Dr. Jameson is a former K-12 teacher, teaching all grade levels from preschool to high school and is now a full time faculty member at a large, online institution. Dr. Jameson has worked in institutional research, strategic planning and accreditation in higher education for over nine years and was a founding Director of the Institutional Assessment office at a small, private university. As the Director, she was the only institutional research employee and conducted all research and assessment responsibilities for the institution. As an Association for Institutional Research/National Center for Educational Statistics postdoctoral fellow in 2009, she conducted a study concerning features of campus data systems and reporting to IPEDS. Dr. Jameson most recently served as the Director of Academic Quality at a large, online institution.

Dr. Jameson has been a part of accreditation re-affirmation committees for several universities including accreditation for WASC (Western Associate of Schools and Colleges), SACS (Southern Association of Colleges and Schools) and HLC (Higher Learning Commission). She has lead and developed academic and co-curricular review processes for universities. Dr. Jameson has also lead satisfaction surveys and programmatic specialized accreditations at the university level.

Dr. Jameson received her PhD from Florida State University in 2008 in Educational Psychology with minors in Statistics and Program Evaluation. Dr. Jameson has taught in higher education for over 10 years at the undergraduate and graduate levels. She has been a part of numerous research projects both with a group and on her own in all research method types (quantitative, qualitative, mixed methods) and has published numerous peer-reviewed articles and presented at numerous national conferences. She has taught research methods, and quantitative analysis and has served on dissertation committees. She also currently serves on an international university Institutional Review Board committee.

Mr. Eric Jameson

Adjunct Faculty, UAV Design and Build Expert, UAV Product Manager at Stampede Global

Mr. Eric Jameson is an adjunct faculty member for Unmanned Vehicle University. He was a career Intelligence Officer with the United States Air Force (USAF) and has over 25 years of experience with the USAF serving in numerous combat zones from the Tactical to the

Operational level. He has worked with all combat related platforms in the USAF inventory, manned and unmanned.

Mr. Jameson started his career as a Target Intelligence Specialist with a reserve F-16 unit, where he was awarded numerous Outstanding Performer awards and deployed to contingencies supporting OPERATION DESERT STORM, OPERATION DENY FLIGHT, OPERATION DECISIVE EDGE, and OPERATION NORTHERN WATCH working with a variety of USAF aircraft. As an Air Reserve Technician, he was selected as the Air Force's Outstanding Intelligence Intermediate-Level Civilian of the Year. Mr. Jameson graduated with a B.A. in Political Science from the University of Texas at Arlington. He was then selected for commissioning in the Air Force to serve as a Squadron Intelligence Officer before becoming the Wing Intelligence Officer for an F-16 unit and finally heading up operations in the Air Operations Center – Intelligence, Surveillance and Reconnaissance (ISR) Division.

After retiring, Mr. Jameson utilized his recognized subject matter expertise in ISR and UAV's on several contracts to include building the entire fundamentals courseware for the Saudi Arabian Alternate Command Operations Center (ACOC) and working with the Joint Improvised Explosive Device (IED) Defeat Organization (JIEDDO). As a Senior Intelligence Analyst, he deployed to Afghanistan for 6 months in support of OPERATION ENDURING FREEDOM where his analytical efforts were directly responsible for over 3,000lbs of home-made-explosives (HME) being taken off the battlefield.

Mr. Jameson is a graduate of the Air Education and Training Command's Instructor School in addition to the following specialty courses; Intelligence Systems Training, Tactical Electronic Combat Intelligence, Combat Survival Training, Practical Intelligence, Air Defense Electronic Warfare, Wild Stallion Combat Search and Rescue, Anti-Terrorism, Squadron Officers School, MQ-1/9 Intelligence Formal Training, and the Air Force Air Operations Center – Intelligence Division training. Mr. Jameson is the author of the original Concept of Operations which created the Non-Traditional Intelligence Surveillance and Reconnaissance (NT-ISR) mission set used by the USAF. He also built the Tactical to Operational Level Architecture for Mission Reporting and Weapons System Video used in OPERATION IRAQI FREEDOM for which he received the Defense Meritorious Service Award.

COURSE DESCRIPTIONS

Unmanned Vehicle Systems

UAV 301/601 Unmanned Aircraft Systems Fundamentals (4 credits)

This course provides a comprehensive technical overview of unmanned aircraft systems. The following topics are covered in this course: UAV Components, UAV Communications & Data Links, UAV Sensors & Characteristics, UAV Ground Control Systems, Civil UAV Types, Roles and Operations, Civil Airspace Integration, Sense and Avoid Systems, UAV Mishaps, Causes of Failure, Improving Reliability, Human Machine Interface, UAV Alternative Propulsion (Fuel Cells and Solar), UAV Navigation, UAV Autonomous Operations, UAV Swarming, Future UAV Roles & Technologies. The 301 course covers the same material as UAV-601, but the level of student understanding, the homework, and the exams are significantly less demanding that in UAV-601. UAV 301 is intended for certificate program Students. UAV 601 is intended for graduate program students.

Prerequisites: Algebra

UAV 302/602 Civil and Commercial Unmanned Aircraft Systems (4 credits)

This course, *Civil and Commercial Unmanned Aircraft Systems* introduces students to the uses of civil and commercial Unmanned Aircraft Systems (UAS), sometimes called domestic drones. We are currently experiencing revolutionary changes in aviation due to the rapid implementation of UAS. New paths to airspace access are opening up in the United States and around the world. UAS operations are surging, creating jobs, new benefits, and new challenges for society. Civil missions are performed by civilian government, also known as the public sector. Civil customers may include law enforcement, first responders, public universities, and scientific researchers, among others. Commercial missions are performed by the private sector or individuals. While not strictly commercial, this course also covers personal and recreational UAS. The 302 course covers the same material as UAV-602, but the level of student understanding, the homework, and the exams are significantly less demanding than those in UAV-602. UAV 302 is intended for certificate program students. UAV 602 is intended for graduate program students.

Prerequisites: UAV 301/601

UAV 303 Small UAV Design and Construction (4 credits)

This vocational technical course will provide the student with the knowledge to build and fly their own UAV. Topics covered include Definitions and Types, Small UAV Sensors, Small UAV Design, Small UAV Propulsion, Small UAV Energy Systems, Small UAV Regulation, Small UAV Operations, Starting a UAV Business. Course material will help students make the best decision possible in purchasing small UAVs. The content will also help graduates be effective as a pilot, sensor operator, maintenance technician, mission commanders, observers, supervisor, purchasing agent, decision makers, and more. The participants will gain a thorough

working knowledge of small UAVs and sensors including operational capabilities of the most common systems available today, and the technology behind them.

Prerequisites: Algebra

UAV 604 UAV Laws, Regulations and Intellectual Property (4 credits)

This course will survey the rapidly evolving field of the law governing the use of Unmanned Aircraft Systems ("UAS") in the national airspace ("NAS"). The course will proceed based on six "modules" addressing various aspects of the new field of UAS Law. These modules are: (1) Emerging FAA Regulatory Framework; (2) Government Use of UAS and the Fourth Amendment; (3) State Regulation of Government and Commercial UAS; (4) Tort Liability for UAS Operations; (5) Emerging Frameworks for UAS and Privacy; and (6) Overview of Intellectual Property Issues for the UAS Industry. Upon successful completion of the course, the student will have a working knowledge of the legal issues relevant to the UAS industry

Prerequisites: None

UGV 601 Unmanned Ground Vehicle (UGV) Fundamentals (4 credits)

GM, BMW and Cadillac have all announced production of driverless cars; these cars can drive and navigate without human input. The vehicles use radar, Lidar, GPS and computer vision to sense their surroundings. Three states have passed laws permitting driverless cars: Nevada, Florida, and California. This course covers the design of driverless cars/Unmanned Ground Vehicles. Topics covered include: Types, UGV Sensors, UGV Communications and Data Links, Example of a Small UGV Design, UGV Power and Propulsion Design, Design for Reliability and Safety, Outdoor Navigation, Driverless Cars, Sensor Processing, UGV Lifecycle and Design Management, Advanced Reliability Design, Future of Driverless Cars/UGVs.

Prerequisites: Algebra

UGV 602 Autonomous Intelligent Control for Unmanned Ground Vehicles (UGVs)

This is a 12-week comprehensive introductory course on autonomous intelligent control systems and the engineering of mind. Autonomous intelligent control systems provide the architecture for the mind of autonomous robotic vehicles and other intelligent machines, including unmanned air, ground, and sea vehicles. We examine the nature of intelligence, organic and machine, and discuss the basic architectures for achieving machine intelligence.We focus on a reference model architecture developed over several decades by the Intelligent Systems Division of the National Institute of Standards and Technology (NIST) in which the U.S. government has invested more than $350 million.

Prerequisites: UAV 601 or UGV 601

UXV 609 Introduction to Robotics (4 credits)

This course introduces the basics of robot design, planning and control. Topics include linear control theory, coordinate transformations, kinematics, dynamics, nonlinear control, trajectory planning, force control, sensors and actuators, filtering, optimal control and adaptive control.

Prerequisites: Algebra

UXV 401/701 Remote Sensing with Unmanned Systems (4 credits)

This course covers visible, infrared and radar sensors used by unmanned aircraft systems. Lectures include the theoretical background necessary to understand remote sensing applications in the optical and radio frequency portions of the electromagnetic spectrum, to include the effects of dynamic atmospheric conditions, target scene content and clutter. Sensor design and theory of operation is presented in the context of accomplishing specific missions for representative civil and commercial applications. Numerous example images and videos are used to illustrate system operation and performance and to facilitate student learning. Additionally, multi- and hyper- spectral imaging and light detection and ranging (LIDAR) sensors are illustrated and capabilities examined. Representative unmanned system sensor applications covered include target detection/acquisition/tracking, ranging, surveillance, reconnaissance, ground mapping, navigation, environmental monitoring, wildfire suppression, disaster and emergency management, agricultural monitoring, law enforcement, homeland security (airport, border, and port) and communications. The main difference between 401 and 701 is the level of homework, examinations, and understanding required of the students. UXV-401 is intended for certificate program students. UXV-701 is for graduate students only.

Prerequisites: Algebra, Geometry and Trigonometry

UAV 402/702 Unmanned Aircraft Developmental Flight Test and Evaluation (4/6 credits)

This course covers the test and evaluation of unmanned aircraft systems (UASs). Test and evaluation of an UAS is just as much an essential part of the UAS design and development process as it is for a manned aircraft. However, the complexity and various levels of autonomy in the modern UAS present unique challenges to the system developer and tester that are seldom encountered in manned aircraft development, test and evaluation programs. This course provides students with a thorough understanding of the entire test and evaluation process as it applies throughout the developmental life cycle of the UAS, culminating with the capstone event—the flight test program. Course topics cover the major elements of test and evaluation process, including the use of modeling and simulation, system integration laboratories, hardware-in-the-loop (HITL) testing and simulation, installed system test facilities, and open air test ranges. The methods and challenges associated with flight testing remotely piloted and autonomous UASs are examined. Test planning, provisioning, and design are covered to include critical performance parameter identification and data collection strategies. Testing in all flight regimes of the UAS mission are covered to include launch and recovery, in-flight vehicle performance, stability, and control, sensor payload performance, communication and data link performance, ground station controls and displays, and human factors. Important test considerations such as design for reliability, robustness, and redundancy are examined. The critical

importance of test safety is emphasized to include risk management, identification of risks, and risk mitigation. UAV 402 is for non-degree program students. UAV 702 is for students enrolled in the Masters or Doctorate program.

Prerequisites: Algebra

UAV 801 UAV Aerodynamics and Flight Stability (6 credits)

This course addresses fundamental principles of aerodynamics and flight stability for applications in unmanned aircraft vehicle (UAV) design. It requires a basic knowledge of mathematics and numerical modeling and is intended as a first course that provides a sound foundation for more advanced courses in aerodynamics modeling and computational fluid dynamics (CFD). Topics include: Fundamental aerodynamics theory, thin-airfoil theory, lifting-line theory, finite-wing theory, vortex-panel method, airfoils suitable for UAVs, airfoil geometry, surface velocity, pressure distribution, boundary layer thickness distribution, airfoil operation in off-design conditions, Influence of Reynolds number, high-lift configurations in UAVs, boundary layer stability, flow control, rotor blade aerodynamics, methodology of CFD, and UAV flight stability.

Prerequisites: Calculus

UXV 803 Unmanned Systems Autonomy (6 credits)

This course provides a comprehensive background in autonomous control of unmanned systems. It describes the different levels of control in autonomous systems and, drawing from multiple examples, defines generic control architecture. The basic elements of control theory and feedback control are covered including PID, fuzzy logic, and artificial neural networks and are applied to the design of simple robotic controller. Each of the key elements in autonomous systems is reviewed. Starting with sensing, we work through higher levels of information processing such as feature extraction, detection, recognition, and identification. The special problem of geo-location and mapping is discussed. We describe how this information can be represented in a world model including uncertainty and probabilistic descriptions of state. Mechanisms for reasoning, planning, and optimization in decision making are described. Basic coordination schemes are discussed such as group decision making, task allocation, scheduling, and formation control. Human interfaces and adjustable levels of autonomy, and issues related to establishing trust in autonomous systems are discussed. The course concludes with an overview of swarming systems and biological mechanisms for collaborative control of multiple systems. Design patterns for swarm control are discussed and a sample system developed. Case studies of swarm control are studied and their effectiveness evaluated.

Prerequisites: UAV 601 or UGV 601 and Calculus

UXV 805 Human Robot Interaction (4 credits)

Numerous unmanned aircraft system accidents have been attributed to the design of the ground control station interface between the human and the machine. This course focuses on the emerging field of human-robot interaction (HRI) which comprises a multitude of disciplines including: robotics, artificial intelligence, human factors, human computer interaction and cognitive psychology. Topics include: Good practices when designing HRI systems, interaction and architectures, programming languages, metrics, social robotics,

emotions, frameworks and relations between perception, actuation and HRI. The main goal is to improve the interaction between a human and machine.

Prerequisites: Algebra

UXV 806 Advanced Motion Planning Algorithms (4 credits)

This course is a general overview and advanced algorithms of motion planning field for UGV & UAV with large aspects of applications. Reading assignments are lectures. Student evaluation is done through class participation and final report at the end of the course. The course will provide the graduate student with advanced capabilities with motion planning, control and algorithms in robotics. Topics include: Introduction, Representations of Classical Planning and Complexity, Plan-Space Planning: Planning-Graph Techniques, Heuristic and Control Strategies: State-Space, Planning and Resource Scheduling, Motion in challenging environments, BUG Algorithms and Piano Movers Problem, Grid Search Methods, Probabilistic Roadmap Planners, Car- Like Robot Motion Planning, 3D Motion Planning, Multi Agents Planning Methods, UAV Motion Planning Aspects

Prerequisites: Calculus

UXV 807 Image Processing and Automatic Target Recognition (4 credits)

Image processing topics include: Digital image fundamentals: representation, sampling and quantization, image acquisition, basic relationships between pixels, imaging geometry; Image transforms: discrete Fourier transform, discrete cosine transform, Walsh and Hadamard transforms, Hotelling transform; Image enhancement: in spatial domain and in frequency domain, image smoothing and sharpening; Image restoration: degradation models, inverse filter, Wiener filter; Color and pseudo-color image processing; Image segmentation: detection of discontinuities, thresholding, region-oriented segmentation, the use of motion analysis in segmentation.

Prerequisites: Calculus

Throughout the course various ATR sensors are discussed including: FLIR, SAR, LIDAR, and others. First, the course describes ATR system architecture. The course provides an overview of various ATR modules: preprocessing, image and signal enhancement, target detection, segmentation, feature extraction, and classifications. The course describes various features extraction techniques and classification methods, ranging from traditional statistical pattern recognition approaches to model-based techniques. The course presents an overview of advanced ATR concepts such as: multi-sensor systems, modeling and phenomenology, adaptive and neural net based methods, and other artificial intelligence techniques are described. Finally, we discuss evaluation techniques of ATR systems.

UAV 808 UAV Structural Analysis (4 credits)

This course will provide the graduate student with an introduction to Aircraft Structural Analysis. The course provides the student with the basic tools of structural analysis. The use of energy methods of analysis is explained. Emphasis is placed on the methods of complementary and potential energy. The role and

limitations of each method of analysis are explored. The analysis of aircraft structures covers analysis of the thin-walled, cellular type of structure peculiar to aircraft, discussions of structural materials, fabrication and function of structural components, introduction to structural idealization, modifications necessary to account for axial constraint effects, computational methods of structural analysis, modern finite element method for continuum structures, and airworthiness and aeroelasticity.

Prerequisite: MAT 704 or equivalent Calculus course

UAV 809 UAV Propulsion Systems, Methods and Selection (4 credits)

This course lectures related to fundamental principles of Unmanned Aerial Vehicle (UAV) propulsion design. It is intended as a first course that provides in-depth understanding of state-of-the-art propulsion issues for UAVs, including propulsion options, cycle analysis, and principles of operation, systems, components, and performance and efficiency calculations. Also the Theories of aero-engines and their related background in aerodynamics, thermodynamics and stress analysis are presented. System as well as component engineering aspects of engine aero-thermo-mechanical design is examined. Unmanned Aircraft Systems alternative power will be discussed.

Prerequisites: Algebra

UXV 999 Special Topics (4 credits)
Student will work with their instructor to define requirements, scheduling and work for a special topic in unmanned vehicle systems engineering or a closely related and relevant topic.

Systems Engineering and Project Management

MOD 471 Modeling & Simulation (4 credits)

This course is designed to develop ability to model and analyze real systems using discrete event simulation. Simulation is a powerful tool. Mastering such a tool is a valuable asset in the workplace and in academic research. During this course, one should expect to gain experience in: Formulating an appropriate simulation model for a system; implementing the model as a computer program and evaluating the output of the model.

Pre-requisites: Algebra

SYS 471 Systems Engineering II (4 credits)

This course covers the architecture and design of large-scale and decentralized systems from technical and management perspectives. Systems architectures, requirements analysis, design tradeoffs, and reliability through case studies and mathematical techniques. International standardization bodies, engineering frameworks, processes, notations, and tool support from both theoretical and practical perspectives are covered in detail.

Pre-requisites: Algebra

SYS 401 Introduction to Systems Engineering (4 credits)

This 12-week 'instructor-led' online course introduces fundamental principles of the systems engineering process and techniques. It covers the role of system engineering in the system life cycle from pre-concept exploration through concept development, design, production, utilization, operations support, and retirement. It is identical to the SYS 601 course except for assignments and demonstrated level of learning designed at the vocational-technical level. It addresses technical and project processes with which the system engineer is involved, enabling and support process activities, and specialty engineering activities. Tailoring of the system engineering function to suit the scope and needs of the project will be discussed. Finally, the course reviews management processes and techniques with which system engineer will be involved as part of the program management activity.

Prerequisities: Algebra and UAV 601

SYS 601 Introduction to Systems Engineering (4 credits)

This graduate course introduces the principles and methods of Modern Systems Engineering. Lectures include needs identification, requirements formulation, concept generation and selection, trade studies, preliminary and detailed design, component and subsystem test and integration as well as functional testing and delivery and operations. The concepts for tradeoffs between cost, performance and schedule are also discussed. The material serves as a baseline for advanced unmanned systems engineering courses.

Prerequisites: Algebra

SYS 701 Project Management of Complex Systems (4 credits)

This project-based course exposes students to tools and methodologies useful for the effective management of UAV projects. This course presents the tools and techniques for project definition, work breakdown, estimating, resource planning, critical path development, scheduling, project monitoring and control, and scope management. These tools will be presented within the context of a life cycle and a systems approach. Students will be exposed to advanced project management software. The basics of the Earned Value Management System (EVMS) will be covered. The project management course includes preparation for the Certified Associate in Project Management (CAPM) certification by the Project Management Institute (PMI). PMI certification formally recognizes an individual's competency in project management process and is widely acknowledged as a significant accomplishment by practitioners in the field.

Prerequisites: SYS 601

SYS 702 System Conceptual Design (4 credits)

This course explains the details of the conceptual design phase of an unmanned aircraft system development program. The course provides comprehensive coverage of all elements of unmanned aircraft systems, architectural options, and design drivers across diverse system classes. The end-to-end unmanned aircraft system is described, rather than just the aircraft. Each week of study highlights the system element

interactions that impact top-level system performance. For example, the interactions between sensor resolution, acoustic detection, and unmannedaircraft (UA) sizing are detailed. The reader will gain a deep appreciation for the multidisciplinary nature of unmanned aircraft system design. She/ he will be able to conduct cross-discipline trade studies to yield robust, well-balanced systems that provide superior operational utility. This text provides detailed analysis of system elements unique to unmanned aircraft. By combining all of these disciplines in one work, this should serve as a single resource for unmanned systems analysis. Many important system element analysis methods are either not published, not covered in sufficient depth elsewhere, or exist in single-discipline books.

Prerequisites: SYS 601

SYS 703 System Design and Integration (4 credits)

This course addresses the systems engineer's activities during the engineering and manufacturing development phase of a system development program. The processes of design and test, modeling and simulation and tradeoff analysis are explained. Topics include technical management processes, interface management, configuration management, technical performance measurement, risk management, technical data management and verification and validation. Systems engineering procedures and tools employed during these phases are identified and their use is illustrated.

Prerequisites: SYS 601

SYS 704 Systems Engineering, Architecture & Design (4 credits)

This course covers the architecture and design of large-scale and decentralized systems from technical and management perspectives. Systems architectures, requirements analysis, design tradeoffs, and reliability through case studies and mathematical techniques. International standardization bodies, engineering frameworks, processes, notations, and tool support from both theoretical and practical perspectives are covered in detail.

Prerequisites: SYS 601

SYS 705 Cost Estimation and Earned Value Management (EVM) (6 credits)

This course provides the foundation for the effective use of cost estimating, financial management, and earned value management (EVM) on projects. The EVM policies and methodologies are explained for performance measurement of programs. The cost estimating processes, methods, techniques, analytical principles, data, confidence bands and specialized costing are practiced. Students will learn how to allocate funds within appropriation categories and use of funds from each appropriation correctly. The need for an integrated baseline review process is explained. Information systems for financial management are described along with reporting and management techniques.

Prerequisites: SYS 601

SYS 706 Risk Analysis and Management (6 credits)

The course is concerned with techniques used in the identification, assessment and control of uncertainties in a project-based enterprise. Uncertainty is inherent in all projects and operations and particularly in the aspects of technical, financial, schedule, legal and quality (the latter includes safety, health, environment and facility integrity) performance. Techniques used in risk mitigation are studied. Risk Analysis and Management is a body of expertise focused on the systematic and comprehensive analysis of the uncertainty in projects and project based operations.

Prerequisites: SYS 601

SYS 708 Project Planning, Scheduling and Control (6 credits)

This project management course teaches techniques that will help you plan, implement, and complete projects with desired results…on time and within budget. Learn how to use project management systems and tools to create clear project missions and goals. Learn to accurately estimate project time and costs, employ project quality management, schedule and allocate time-critical resources, and establish feedback systems for project control.

Prerequisites: SYS 601

Electrical/Electronics Technology and Engineering

ELE 551 Electrical Engineering Principles for non-Electrical Engineers (4 credits)

This course will present a general overview of the electrical engineering discipline with the intent of applying the knowledge to UAV systems. It is a course designed for non-electrical engineering majors and will provide unmanned systems students with sufficient knowledge of electrical systems and electronics to make them better unmanned systems engineers and managers.

Prerequisites: Algebra

ELE-601: Electrical Engineering Principles and Applications (4 credits)

This course covers the material in a typical undergraduate electrical engineering course of study. Topics include basic circuit analysis, digital systems, electronic devices and circuits, and electromechanics. It provides the systems engineer with an ability to apply knowledge of mathematics, science, and engineering to identify, formulate, and solve problems of an electrical/electronic nature. The course also helps prepare systems engineers to function on interdisciplinary teams and gives them an ability to communicate effectively with electrical engineers.

Prerequisites: The fundamental prerequisites for this course are basic college-level physics and single-variable calculus. A prior course in differential equations would be helpful for transient analysis, but is not essential.

Mathematics / Science

MAT 401 Fundamental Engineering Mathematics (4 credits)

This 12-week 'instructor led' online course introduces and consolidates basic mathematical principles and promotes awareness of mathematical concepts for students needing a broad base for further engineering courses. The course is taught online using course management software. This course will provide the graduate student with an introduction to fundamental mathematical principles for applications in engineering. Engineering mathematics is a branch of applied mathematics concerning mathematical methods and techniques that are typically used in engineering and industry. Engineering mathematics is an interdisciplinary subject motivated by the systems engineers' needs both for practical and theoretical considerations, and to deal with constraints to be effective in their work. This course would be an ideal mathematics refresher course for students who have been away from the classroom for many years. It also helps to prepare students for some of the more advanced graduate mathematics courses

Prerequisites: Algebra

MAT 701 Numerical Analysis (4 credits)

This course will emphasize the development of numerical algorithms to provide solutions to common problems formulated in science and engineering. The primary objective of the course is to develop the basic understanding of the construction of numerical algorithms, and perhaps more importantly, the applicability and limits of their appropriate use. The emphasis of the course will be the thorough study of numerical algorithms to understand (1) the guaranteed accuracy that various methods provide, (2) the efficiency and scalability for large scale systems and (3) issues of stability. Topics include the standard algorithms for numerical computation including root finding for nonlinear equations, interpolation and approximation of functions by simpler computational building blocks (for example - polynomials and splines), numerical differentiation and divided differences, numerical quadrature and integration.

Prerequisites: Algebra

MAT 702 Applied Differential Equations (4 credits)

The construction of mathematical models to address real-world problems has been one of the most important aspects of each of the branches of science. It is often the case that these mathematical models are formulated in terms of equations involving functions as well as their derivatives. Such equations are called differential equations. If only one independent variable is involved, often time, the equations are called ordinary differential equations. The course will demonstrate the usefulness of ordinary differential equations for modeling physical and other phenomena. Complementary mathematical approaches for their solution will be presented, including analytical methods, graphical analysis and numerical techniques. The basic content of the course includes first order equations, mathematical models, linear equations of second order, the Laplace transform, linear systems of arbitrary order and matrices, nonlinear systems, phase plane analysis and numerical methods.

Prerequisites: Calculus

MAT 703 Linear Algebra (4 Credits)

This course is an introduction to the concepts and methods of linear algebra. Among the most important topics are general vector spaces and their subspaces, linear independence, spanning and basis sets, solution space for systems of linear equations, linear transformations, and their matrix representations, and their inner products. The course is designed to develop an appreciation for the process of mathematical abstraction and the creation of a mathematical theory. Practical paper projects are also included.

Prerequisites: Algebra or MAT 401 and Mat 701

MAT 704 Calculus (4 credits)

This 12-week 'instructor led' online course provides an introduction to fundamental calculus. This course will provide the graduate student with an introduction to Calculus. Calculus was first invented to meet the mathematical needs of scientists of the sixteenth and seventeenth centuries, needs that were mainly mechanical in nature. Nowadays it is a tool used almost everywhere in modern engineering to describe change and motion. Calculus also provides important tools in understanding functions and has led to the development of new areas of mathematics including real and complex analysis, topology, and non-euclidean geometry. This course is a prerequisite to other graduate courses in the Masters and Doctorate of Unmanned Vehicle Systems Engineering Programs of Study.

Miscellaneous

HUM 481 Human Robot Interaction (4 credits)

Numerous unmanned aircraft system accidents have been attributed to the design of the ground control station interface between the human and the machine. This course focuses on the emerging field of human-robot interaction (HRI) which comprises a multitude of disciplines including: robotics, artificial intelligence, human factors, human computer interaction and cognitive psychology. Topics include: Good practices when designing HRI systems, interaction and architectures, programming languages, metrics, social robotics, emotions, frameworks and relations between perception, actuation and HRI. The main goal is to improve the interaction between a human and machine.

Prerequisites: None

LAW 491 UAV Laws & Regulations (4 credits)

This course will survey the rapidly evolving field of the law governing the use of Unmanned Aircraft Systems ("UAS") in the national airspace ("NAS"). The course will proceed based on six "modules" addressing various aspects of the new field of UAS Law. These modules are: (1) Emerging FAA Regulatory Framework; (2) Government Use of UAS and the Fourth Amendment; (3) State Regulation of Government and Commercial UAS; (4) Tort Liability for UAS Operations; (5) Emerging Frameworks for UAS and Privacy; and (6) Overview of Intellectual Property Issues for the UAS Industry. Upon successful completion of the course, the student will

have a working knowledge of the legal issues relevant to the UAS industry.

Prerequisites: None

NAV 703 Position, Navigation, Time (4 credits)
This graduate level course provides a survey of UAS Navigation techniques to include Satellite Navigation, Inertial Navigation, Sensor Fusion for Navigation, Image Navigation (Skysys), Locatta, Satellite/INS/Video, (NAVSYS), and Image Aided INS (NAVSYS). The following topics are studied: Introduction: The importance of PNT to various UAS application domains, operational environments, and regulations, Basic principles of multi-rotor UAS flight dynamics, Guidance, navigation, and control (GNC) of multi-rotor UAS, Use PixHawk open-source flight controller; GNSS and inertial sensors for UAS operations– Part 1;, GNSS and inertial sensors for UAS operations – Part 2; GNSS and inertial sensors for UAS operations – Part 3; UAS flight management and path planning; Autonomy at the various levels of GNC and flight management; Sense-and-avoid, well-clear and collision avoidance Geo-fencing and assured containment; Alternative navigation capabilities for UAS operations; Collaborative navigation and swarming of UAS

Prerequisite: Linear Algebra and Pass the Mathematics entry exam

ORM 511 Operational Risk Management (4 credits)

This course provides the student with a framework and methodology for measuring and modeling Operational Risk as a systems engineer or a project manager. Students will learn how to identify, analyze, measure and manage risks by employing state-of-the-art models and methodologies. Students become cognizant of the various software offered by vendors for Operation Risk Management. The course material gives the student the tools to manage operational risk system of an unmanned system under development.

Prerequisites: Algebra

RES 771 Research Methods (4 credits)

Systems engineering as a technical discipline needs both qualitative and quantitative tools and research methods to understand customer requirements, explore design options, design robust and optimized systems, and validate designs in the intended environments. This class is an introduction to the quantitative and semi-quantitative toolset and research methods that are primarily concerned with generating and managing information.

Research Credits

RES 901, 902, 903 Doctor of Science Dissertation Research (4 credits each)

Students will work with an instructor to identify a topic, perform research and produce a Doctor of Science Dissertation in a specialized area of study. An instructor who is a subject matter area expert will guide the student through topic selection, problem identification, literature search, problem solution, dissertation structure and content. At the end of the program students will be required to give a 20 to 40 minute presentation of their research to the examining committee. Dissertations are judged by whether or not an original and unique contribution is made to scholarship in the unmanned vehicle systems body of knowledge.

Description of Facilities

Unmanned Vehicle University is located in downtown Phoenix at 1 E Washington St, Phoenix, AZ 85004. The facilities include classrooms, offices, a conference room and a break room. There is approximately 13,000 sq. ft. of space that can be contracted for use. UVU also has an auxiliary operating location with classroom, lab, and office space at the Presson Goodyear Airport, 1300 South Litchfield Road, Building 14, Goodyear, Arizona. UVU also has additional office, classroom, and laboratory space in downtown Phoenix, AZ.

2016 Calendar

January 1	New Year's Day
January 3	Term 1 - Start
January 18	Martin Luther King Day
February 15	Presidents' Day
March 26	Term 1 - End
April 3	Term 2 - Start
May 30	Memorial Day
June 25	Term 2 - End
July 3	Term 3 - Start
July 4	Independence Day
September 5	Labor Day
September 24	Term 3 - End
September 25	Term 4 - Start
October 10	Columbus Day
November 11	Veterans Day
November 24	Thanksgiving Day
December 17	Term 4 - End
December 25	Christmas Day

2017 Calendar

January 1	New Year's Day
January 2	Term 1 - Start
January 16	Martin Luther King Day
February 13	Presidents' Day
March 24	Term 1 - End
April 3	Term 2 - Start
May 29	Memorial Day
June 23	Term 2 - End
July 3	Term 3 - Start
July 4	Independence Day
September 4	Labor Day
September 22	Term 3 - End
October 2	Term 4 - Start
October 9	Columbus Day
November 11	Veterans Day
November 23	Thanksgiving Day
December 22	Term 4 - End
December 25	Christmas Day

2017 Calendar Weeks for Terms 1, 2, 3, and 4

Student Catalog

Catalogs are made available to students and prospective students in written or electronic format. Within 10 days from the date of a catalog revision, the revised catalog will be submitted to the Arizona State Board for Private Post Secondary Education.

Academic Advisement

Students may call 602-759-7372 to schedule an appointment for academic advisement.

Veterans Assistance

The Provost, two Deans and several faculty members are Veterans, and providing a cost effective education for our veterans is very import to UVU management. Although Unmanned Vehicle University is not currently approved for VA Tuition Assistance/Funding, we offer all Veterans a 50% discount on published tuition rates until the University becomes approved for VA Tuition Assistance/Funding. The Veterans Affairs Office at Unmanned Vehicle University is primarily responsible for assisting veterans and answering their questions. The VA Office provides resource information to students. We encourage veterans attending UVU to contact our office in person or by phone with any questions they may have pertaining to their education. Call (602) 759-7372 or email admissions@uxvuniversity.com for assistance.

Space, Facilities and Equipment

All UVU academic courses are taught online via modern distance learning methods and technologies. There is no residency requirement for the certificate or graduate degree programs. On-site classes and/or seminars are currently conducted in a conference room at 1 E Washington St, Suite 500, Phoenix, AZ 85004. A large conference room with seating for 20 students is the main area for teaching the courses. A second conference room with seating for 6 is also available. Numerous separate offices can also be used for teaching small groups. A large break room with kitchen amenities and a student lounge with TV are available. UVU also has an auxiliary operating location with classroom, lab, and office space at the Presson Goodyear Airport, 1300 South Litchfield Road, Building 14, Goodyear, Arizona. UVU also has additional office, classroom, and laboratory space in downtown Phoenix, AZ.

Certified as True and Correct in Content and Policy

_____ _____

University Officials Signature / Title **Effective Date**

Appendix A: Student Enrollment Agreement

STUDENT ENROLLMENT AGREEMENT
R4-39-401(A)(1)

Unmanned Vehicle University, 1 E Washington St Suite 500, Phoenix, AZ 85004. Fax this completed agreement to 602-532-7672 or email to admissions@uxvuniversity.com Phone: 602-759-7372

Student Name:_____Maiden or other names used: _____
Student ID #: _____
Address:_____
City, State, ZIP:
_____
Phone Number:_____Email _____
Date of Birth: _____
Gender:_____(M or F)
Hispanic: Yes___No____
Ethnicity (one or more of the following):_____American Indian or Alaska Native_____Asian_____Black or African American_____Native Hawaiian or Other Pacific Islander_____White_____Other (Describe)

US Citizen:_____Yes_____No

Highest Degree Earned (e.g., Bachelor's, Master's, etc.) _____

PROGRAM INFORMATION

Anticipated Commencement date of program _____

Program title _____

Total semester credit hours of the program _____

TUITION

The total cost for the Doctor of Science Degree in Unmanned Systems Engineering program:

Tuition:	$24,000 (over 3 years)
Books/Supplies	$1200
Total Program Costs	$25,200

Tuition period is 3 years from the date this contract is signed

The total cost for the Masters Degree in Unmanned Systems Engineering program:

Tuition:	$14,400 (over 2 years)
Books/Supplies	$900
Total Program Costs	$15,300

Tuition period is 2 years from the date this contract is signed Initials _____

The total cost for the Certificate in Unmanned Systems Project Management program:

Tuition:	$6,400 (over 1 year)
Books/Supplies	$1,400
Total Program Costs	$7,800

Tuition period is 1 year from the date this contract is signed.

Initials _____

PAYMENT METHOD AND TERMS OF PAYMENT (Payment to comply with R4-39-405)

1. No fees required for enrollment
2. Each course is $400 per credit hour paid at the beginning of each course.
3. Payment methods accepted include cash, check, credit card and bank transfer

CANCELLATION AND REFUND POLICY (To comply with R4-39-404)

An applicant denied admission by the university is entitled to a refund of all monies paid.

Three-Day Cancellation: An applicant who provides written notice of cancellation within three days (excluding Saturday, Sunday and federal and state holidays) of signing an enrollment agreement is entitled to a refund of all monies paid. No later than 30 days of receiving the notice of cancellation, the university shall provide the 100% refund.

Other Cancellations: An applicant requesting cancellation more than three days after signing an enrollment agreement and making an initial payment, but prior to entering the university, is entitled to a refund of all monies paid.

Refund after the commencement of course:

If for any reason a student chooses to withdraw from a program, the university has established this refund policy for the student's protection. A student may terminate an enrollment at any time by notifying the university in any manner (in writing is preferred).

Address:	1 East Washington Street, Suite 500, Phoenix, Arizona 85004
Telephone:	602.759.7372
Facsimile:	602.532.7672
Email:	admissions@uxvuniversity.com
Website:	www.uxvuniversity.com

If Unmanned Vehicle University is notified of cancellation within five (5) calendar days after midnight of the day on which the enrollment agreement is accepted, an applicant requesting cancellation in writing within this time will be given a refund of all money paid to the Unmanned Vehicle University.

After the university receives the first completed assignment and until the student completes half of the course, if the student requests cancellation before the course begins the student is entitled to a 100% refund. After the course begins the refund will be processed according to the following table:

Initials _____

Student Refund Schedule

12 Week Course	
% of the weeks attempted	Tuition refund amount
10% or less	90%
More than 10% and less than or equal to 20%	80%
More than 20% and less than or equal to 30%	70%
More than 30% and less than or equal to 40%	60%
More than 40% and less than or equal to 50%	50%
More than 50%	No refund is required

Books, supplies and fees are not refundable.

Refunds will be issued within 30 days of the date of student notification, or date of university determination (withdrawn due to absences or other criteria as specified in the university catalog), or in the case of a student not returning from an authorized Leave of Absence (LOA), within 30 days of the date the student was scheduled to return from the LOA and did notreturn.

Holder in Due Course Statement:

Any holder of this consumer credit contract is subject to all claims and defenses which the debtor could assert against the seller of goods or services obtained pursuant hereto or with the proceeds, hereof Recovery hereunder by the debtor shall not exceed amounts paid by the debtor (FTC Rule effective 5-14-76).

STUDENT GRIEVANCE PROCEDURE

Purpose: The primary objectives of this Student Grievance Procedure are to ensure that students have the opportunity to present grievances to the University regarding a certain action or inaction by a member of the University community and that the University has a consistent way of resolving those grievances in a fair and just manner.

Informal Resolution: Prior to invoking the procedures described below, the student is strongly encouraged, but is not required, to discuss his or her grievance with the person alleged to have caused the grievance. The discussion should be held as soon as the student first becomes aware of the act or condition that is the basis of the grievance.

Review: If a student decides to file a grievance, he or she may present the grievance in writing to the President of the University. The student must submit the grievance within 45 calendar days after the student first became aware of the facts that caused the grievance. The President will conduct an investigation, make a determination and submit his or her decision in writing to the student and to the

Initials _____

person alleged to have caused the grievance within ten calendar days of receipt of the grievance. The written determination shall include the reasons for the decision and indicate the remedial action to be taken if any.

If the complaint cannot be resolved after exhausting the institution's grievance procedure, the student may file a complaint with the Arizona State Board for Private Postsecondary Education. The student must contact the State Board for further details. The State Board address is 1400 W. Washington Street, Room 260, Phoenix, AZ 85007, phone # 602-542-5709, website address: www.azppse.gov

THE STUDENT UNDERSTANDS:

1. Unmanned Vehicle University (UVU) does not guarantee acceptance of credit for previous education, training, work experience (experimental learning), or CLEP.
2. UVU does not guarantee job placement to graduates upon program/course completion or upon graduation.
3. UVU reserves the right to reschedule the program/course start date when the number of students scheduled is too small.
4. UVU will not be responsible for any statement of policy or procedure that does not appear in the University catalog.
5. UVU reserves the right to discontinue the student's training for unsatisfactory progress, nonpayment of tuition or failure to abide by University rules
6. Information concerning other schools/universites that may accept UVU credits toward their programs can be obtained by contacting the office of the President. It should not be assumed that any programs described in the UVU Student Catalog could be transferred to another institution. UVU does not guarantee the transferability of credits to any college, university or institution. Any decision on the comparability, appropriateness and applicability of credits and whether they should be accepted is the sole decision of the receiving institution.
7. This document does not constitute a binding agreement until accepted in writing by all parties.

STUDENT ACKNOWLEDGEMENTS:

1. I hereby acknowledge receipt of the UVU student catalog dated_____, which contains information describing programs offered, and equipment/supplies provided. The University's catalog is included as a part of this enrollment agreement, and I acknowledge that I have received a copy of this catalog.

_____Student initials

2. Also, I have carefully read and received an exact copy of this enrollment agreement.

_____ Student initials

3. I understand that the UVU may terminate my enrollment if I fail to comply with attendance, academic and financial requirement or if I disrupt the normal activities of the university. While enrolled in the University, I understand that I must maintain Satisfactory Academic Progress as described in the University student catalog and that my financial obligation to the university must be paid in full before a certificate may be awarded.

_____ Student initials

4. I also understand that this institution does not guarantee job placement to graduates upon program/course completion or upon graduation.

_____Student's initials

UVU does not discriminate in its admissions because of race, sex, color, creed, age, religion, or national origin of admitting students

CONTRACT ACCEPTANCE:

I, the undersigned, have read and understand this agreement and acknowledge receipt of a copy. It is further understood and agreed that this agreement supersedes all prior or contemporaneous verbal or written agreements and may not be modified without the written agreement of the student and the UVU Official. I also understand that if I default upon this agreement I will be responsible for payment of any collection fees or attorney fees incurred by Unmanned Vehicle University.

My signature below signifies that I have read and understand all aspects of this agreement and do recognize my legal responsibilities in regard to this contract.

Signed this_____day of_____20_____

_____ _____

Signature of Student Date

_____ _____

Signature of University Official Date