

Introduction to Motion Capture

Fall 2022 | TH 5:45pm – 9:00pm | 14 E Jackson - Room 212

Instructor: Laura Wargo

Email: lwargo@depaul.edu

Office Hours: Tuesdays, 6:00-7:30PM – By appointment, Zoom

This course is intended to give students the knowledge and skills to run a successful mocap shoot in a studio-paced environment, and the wisdom to best incorporate mocap into their own projects. It will provide an expanded view of the animation industry and focus on adding a powerful tool to your repertoire.

PREREQUISITE(S): ANI 231 OR GPH 338, or equivalent experience

After completing this course, students will have:

- Knowledge of the Motion Capture pipeline beginning from capturing data to creating a polished, demo-reel quality animated performance.
- A broad understanding of the Motion Builder software
- Hands-on experience working with state-of-the-art motion capture tools, including the latest developments in data capturing technology: Xsens suits

Xsens Suits:

IMPORTANT: While there are many Xsens suits available, there are only **two sets of Xsens wires & accompanying laptops**. This means that only two set-ups are available to shoot & record data at any given time. Xsens suits can be checked out via the DePaul CDM Cage. I will do my best throughout the quarter to make time in class to record wherever possible. It is **imperative** however that when using the equipment outside of class that we keep open and proactive communication regarding suit availability. I will create a discussion on D2L to provide space to communicate with each other about check-out times.

1. The suits and accompanying equipment amount to a little over \$28,000. While we have insurance, if there is signs of neglect or abuse that have lead to damage, the students will be responsible for paying for damage. It will not be covered by insurance or only a portion will be covered. In short...be VERY CAREFUL when you check out this equipment. Treat it like a baby. Don't bring it out to the beach and get everything filled with sand. Don't walk around downtown Chicago with it at 1am....etc. Be smart and conscientious and it will be fine.

2. Leave the gear in the kind of condition that you would hope to receive it. Keep things as clean as possible (sweat aside). Pack everything back nicely. Charge the batteries up if you have time. Remove all wires/transmitters/etc carefully and repack them. Make the suit ready to be sent out for dry cleaning (alone in its bag with no electronics). We all need to work together to keep the equipment in top shape!

3. Suits can only be signed out for 24 hours at a time. This is so everyone has a chance to work with them in reasonable time. Consider teaming up to help troubleshoot and to enable more time to work

more efficiently. Make sure you get the equipment back to the cage by the deadline. They are very strict. Bringing equipment back late will cause you to immediately begin accruing late fees. Again though (more importantly), late returned equipment can mess up the next person in line who needs to check it out and who may have scheduled time/locations with others for recording. Be cool! If we are all cool, we will all be much happier!

4. If you come across hardware issues while recording, don't be quiet about it. Make sure when you bring it back you let your instructor and the cage know if anything wasn't working properly.

Reference Websites:

<https://tutorial.xsens.com/>

Students are expected to attend every class during our regular sessions. If for some reason you are unable to attend a class, it is your responsibility to let me know in advance. While each class will be recorded and made available for later review, the intention is to complement not replace the regular class experience.

The student is responsible for any lectures or assignments missed. If an assignment is due a week that you are absent, it is your responsibility to make sure it still arrives on time.

Assignments

Assignments must be handed in on time. *On time* means submitted through D2L one hour before class on the day the assignment is due. All assignments can be fixed up and turned back in later for a better grade if they were turned in on time.

Two absences are permitted without penalty, but three will result in automatic failure of class. (This includes sick days). If there is a significant circumstance that prohibits you from coming to class, please come see me. Attendance for the final is required.

No incompletes will be given without documented proof of circumstances beyond your control.

<https://academics.depaul.edu/calendar/Pages/default.aspx>

Late Work: You are allotted one late assignment per quarter. This assignment must be completed and turned in by the 10th week of the quarter and will still receive full credit. Any other late assignment that you turn in will only count for half credit.

Written Assignments: Must be typed.

Digital Assignments: All assignments handed in digitally must be in the following format (please note upper and lower case usage)

• lastnameFirstname_projectname.extension • example: WargoLaura_project_01.jpg

Special Accommodations: If you have any special considerations please see the instructor.

BACK UP YOUR WORK: Failure of computer software and or Hardware will not be accepted as an extenuating circumstance for late projects or incomplete grades so back up your work at least once a week.

Assignments Final Project

50% of grade 50% of grade

- Meeting Project Deadlines: It is vital to have your work available for critique. Work unavailable for critique will be considered late and will not be accepted unless you are using your one late assignment.
- Creativity and personal input into execution of project
- Coming prepared to class, including assignments uploaded to D2L before class (this gives me time to download the assignments for in-class critiques)
- Taking initiative to work outside of class and research

Academic Integrity & Plagiarism

This course will be subject to the university's academic integrity policy. All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

More information can be found at <https://resources.depaul.edu/teaching-commons/teaching/academic-integrity/Pages/default.aspx>.

The university and school policy on plagiarism can be summarized as follows: Students in this course, as well as all other courses in which independent research or writing play a vital part in the course requirements, should be aware of the strong sanctions that can be imposed against someone guilty of plagiarism. If proven, a charge of plagiarism could result in an automatic F in the course and possible expulsion. The strongest of sanctions will be imposed on anyone who submits as his/her own work a report, examination paper, computer file, lab report, or other assignment which has been prepared by someone else.

If you have any questions or doubts about what plagiarism entails or how to properly acknowledge source materials please ask!!

Keeping our DePaul community safe is of utmost importance in the pandemic. Students, faculty and staff are expected to (1) wear a mask as required at all times

B+ = 89-88% C+ = 79-78% D+ = 69-68%

A = 100-93% B = 87-83% C = 77-73% D = 67-63%

A- = 92-90% B- = 82-80% C- = 72-70% D- = 62-60%

F = 59-0% Your grade will depend on the following criteria:

COVID-19 Health and

Safety Precautions

while indoors on campus; (2) refrain from eating and drinking in classrooms; (3) keep current with their COVID-19 vaccinations or exemptions; (4) stay home if sick; (5) participate in any required COVID-19 testing; (6) complete the online Health and Safety Guidelines for Returning to Campus training; and (7) abide by the City of Chicago Emergency Travel Advisory. By doing these things, we are Taking Care of DePaul, Together. The recommendations may change as local, state, and federal guidelines evolve. Students who do not abide by the mask requirement may be subject to the student conduct process and will be referred to the Dean of Students Office. Students who have a medical reason for not complying with any requirements should register with DePaul's Center for Student with Disabilities (CSD).

Respect for Diversity and Inclusion at DePaul University as aligned with our Vincentian Values

At DePaul, our mission calls us to explore "what must be done" in order to respect the inherent dignity and identity of each human person. We value diversity because it is part of our history, our traditions and our future. We see diversity as an asset and a strength that adds to the richness of classroom learning. In my course, I strive to include diverse authors, perspectives and teaching pedagogies. I also encourage open dialogue and spaces for students to express their unique identities and perspectives. I am open to having difficult conversations and I will strive to create an inclusive classroom that values all perspectives. If at any time, the classroom experience does not live up to this expectation, please feel free to contact me via email or during office hours.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at:

<http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

Incomplete Grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptions cases will receive such approval. Information about the Incomplete Grades policy can be found at

<http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>

Preferred Name & Gender Pronouns

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter so that I may make appropriate changes to my records. Please also note that students may choose to identify within the University community with a preferred first name that differs from their legal name and may also update their gender. The preferred first name will appear in University related systems and documents except where the use of the legal name is necessitated or required by University business or legal need. For more information and instructions on how to do so, please see the Student Preferred Name and Gender Policy at <http://policies.depaul.edu/policy/policy.aspx?pid=332>

Students with Disabilities

Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling them to access accommodations and support services to assist with their success. There are two office locations:

- Loop Campus (312) 362-8002
- Lincoln Park Campus (773) 325-1677 • Email: csd@depaul.edu

Students who register with the Center for Students with Disabilities are also invited to contact Dr. Gregory Moorhead, Director of the Center, privately to discuss how he may assist in facilitating the accommodations to be used in a course. This is best done early in the term. The conversation will remain confidential to the extent possible. Please see <https://offices.depaul.edu/studentaffairs/about/departments/Pages/csd.aspx> for Services and Contact Information.

Schedule

All assignments in this class will be transmitted digitally online through D2L unless otherwise noted.

This schedule is subject to change throughout the quarter, and will be adapted to fit the needs of the students. I will absolutely let you know if and when changes are made to the schedule.

Unless otherwise noted, all assignments will be submitted in digital format online 1 hour prior to class. Assignments may be submitted earlier.

Week 1 Sept. 8	Lecture: Intro to Class, History & general context of Motion Capture	Assignment: Bring 1 clip of Motion Capture animation with a small write-up of what you find cool, impressive, etc. about it. Be ready to discuss!
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Week 2 Sept. 15	Discuss Clips Demo XSens Suits <i>How to put on suit, calibrate character, & record footage & export as .fbx</i>	Assignment: Capture ROM + 3 “unique moves” — Export as .fbx
Week 3 Sept. 22	Lecture: Using Motion Builder <i>Using Control Rig, Setting keys, FK/IK, Pinning, etc.</i> <i>Basic cleaning data</i>	Assignment: Apply motion capture data onto a character (of your choice)
Week 4 Sept. 29	Lecture: Retargeting motion onto different character – <i>layers, posing</i> XSens recording, time permitting	Assignment: Retarget data onto different character (new motion, or from your 3 unique moves)
Week 5 Oct. 6	Lecture: Using the Graph editor, filters, and intro to Story Mode Introduce Ninja Wall Run Assignment XSens recording, time permitting	Assignment: Data for Wall Run
Week 6 Oct. 13	Lecture: Combining and blending motion Introduce Final Project	Assignment: Completed Ninja Wall Run render
Week 7 Oct. 20	View Wall Runs - Critique Lecture: Exaggeration Dance Loop Demo	Assignment: Synopsis for Final Project

Week 8 Oct. 27	Dance Loop Demo continued. XSens Record Time	Assignment: All footage for final captured
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Week 9 Nov. 3	Final Lab	Assignment: All blends due next class
Week 10 Nov. 10	Final Lab	For next class: Final Render Completed
Week 11 FINAL Nov. 17	ANIMATION FINAL REVIEW / CRITIQUE ATTENDANCE MANDATORY	Final Render due before class