



INTEGRATED PRODUCT DESIGN
UNIVERSITY OF PENNSYLVANIA

Guidelines for Graduate Study

2021

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TABLE OF CONTENTS

1.	Introduction	3
2.	Program Advising.....	3
3.	Degree Requirements	4
4.	Attendance at IPD Seminars.....	9
5.	General Information	10
	Registration	10
	Leaves of Absence.....	10
	Obsolescence.....	10
	Changes in Course Program.....	10
	Grades, Credits and Academic Standing.....	10
	Academic Integrity	10
6.	Independent Study	11
7.	Policy on Transfer of Credit Units Earned in Other Institutions	12
8.	Final Project.....	12
9.	Submatriculation/Accelerated Master's	13
10.	Dual Degree Programs	13
11.	Summer Studies.....	14
12.	Records	14

**These guidelines are subject to change.*

1. INTRODUCTION

The University of Pennsylvania's Integrated Product Design program is intended to cultivate design professionals that possess both a breadth of knowledge and a depth of expertise in a specialty, to effectively bridge the domains of technology, manufacturing, business, aesthetics, and human-product interaction. The guiding philosophy of the program is to teach students to create innovative products and experiences and to understand and address the social, environmental and experiential contexts of those products so that product design can be harnessed as a force for the greater good.

The program builds the skills to investigate, imagine, conceptualize and model a wide range of products and their complementary business models. The program draws on the strengths of three internationally recognized schools within the University: The School of Engineering & Applied Science (SEAS), the Wharton School, and the Stuart Weitzman School of Design.

The graduate courses that make up the program are intended to create an interdisciplinary point of view and are taught by professors from all three schools. Studio classes accompany classroom studies, providing creative and analytical approaches, and shifting students between rigorous, technical and explorative processes in the development of both experiential and theoretical knowledge. Collaborative team projects and student-driven independent projects complement the core courses to give students both a solid grasp of the fundamentals and a deep understanding of the nuances of these fields.

The information presented in these Guidelines is not exhaustive; students should also obtain information from the Penn Engineering website: www.seas.upenn.edu/graduate/handbook

More information, updated periodically, on the IPD program is also available on the website, ipd.me.upenn.edu. Reading all the rules and procedures is essential to be familiar with various degree requirements and the plentiful opportunities that are available.

These guidelines together with the information presented on the above listed websites will answer most questions. Advice and answers to questions not covered in these sources may be obtained from the Director¹, Executive Director² or Graduate Program Coordinator³.

** Students who matriculated before July 2021 are subject to the policies that were in effect as of their matriculation date.*

2. PROGRAM ADVISING

There are two areas of advising within the IPD program, master's program academic progress advising and Final Project advising. The first person with whom a new student will have contact will be the Director, Executive Director, Faculty Advisor or Graduate Program Coordinator of the IPD program. These people are responsible for monitoring the student's academic plan and progress during the IPD Master's program. In addition, during the last two semesters of Final Project work, each team or individual pursuing a Final Project is responsible for selecting additional Final Project Advisors to join the Director, Executive Director and IPD 799 faculty in overseeing the team or individual's Final Project. Ideally, representation will come from the School of Engineering and Applied Science, the Stuart Weitzman School of Design and from the

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Wharton School. In certain cases, Final Project committee members may come either from another area of Penn pertinent to the project pursued, or from outside the university. Choices of advisors must be approved by the course faculty. These individuals will form the “Final Project Advisory Team” on the particular project.

3. DEGREE REQUIREMENTS

To achieve a Master’s of Integrated Product Design (M:IPD) or a Master’s of Science in Engineering Integrated Product Design (MSE:IPD) the requirements consist of a total of ten courses (not including foundation courses), seven of which must be from within the School of Engineering and Applied Science. Detailed curriculum requirements for each degree track is given below. The degree requirement also includes four sequential credits of studio work that must be taken in order over the course of four semesters. In accordance with SEAS policy, “No grade lower than a ‘C-’ will be counted in courses designated as ‘core’ courses or those courses must be retaken.” Since this program is cross-disciplinary, students who do not have the applicable foundation in each of the three areas, engineering, design arts, and marketing, may be required to enroll in foundation courses in these areas. Foundation courses must be taken in the first year of study and a grade of “B-” or better must be earned to satisfy the foundation requirement. If a student is unsuccessful in earning the grade of “B-” or better in a required foundation course, they will be required to take an additional course in which the grade of “B-” must be earned to graduate. This course will be determined by the student and the Academic Advisor.

<u>Foundation Courses for both the M:IPD & MSE:IPD</u> 0-3 CUs or proficiency shown	
Engineering Basics	IPD 500 – Product Engineering Basics (1 CU)
Design Basics	IPD 503 –Design Fundamentals (1 CU)
Marketing Basics	EAS 545 – Engineering Entrepreneurship I (1 CU) or MKTG 101 – Introduction to Marketing (1 CU)
<i>Students wishing to take a course other than the above to satisfy the foundation requirement must obtain course approval from the Director or Executive Director.</i>	

<u>Curriculum for M:IPD Program</u> 10 CU + 2 Semesters of Seminar	
Core Courses (5 CU)	
	IPD 514 – Design for Manufacturability (1 CU) OR IPD 515 – Product Design (1 CU) (1 st year)
	IPD 551 – Design Process (1 st Semester) (1 CU)
	IPD 552 – Problem Framing (2 nd Semester) (1 CU)
	IPD 799 – Final Project (3 rd Semester) (1 CU)
	IPD 799 – Final Project (4 th Semester) (1 CU)
Engineering Breadth (1 CU)	
	BE 514 – Rehab Engineering & Design (1 CU)
	CIS 519 – Applied Machine Learning (1 CU)
	CIS 545 – Big Data Analytics (1 CU)

	CIS 557 – Programming for the web (1 CU)
	CIT 590 – Programing Language and Technique (1 CU)
	ENGR 566 – Design of Appropriate Biomedical Technologies for Point of Care Diagnostics (1 – 2 CUs, with advisor approval)
	ESE 516 – IoT Edge Computing (1 CU)
	ESE 545 – Data Mining (1 CU)
	IPD 501 – Integrated Computer-Aided Design, Manufacturing, and Analysis (1 CU)
	IPD 514 – Design for Manufacturability (1 CU)
	IPD 516 – Advanced Mechatronics in Reactive Spaces (1 CU)
	IPD 519 (ESE 519) – Real Time Embedded Systems (1 CU)
	IPD 529 – Designing Connected Objects and Experiences (1 CU)
	MEAM 508 – Materials and Manufacturing for Mechanical Design (1 CU)
	MEAM 510 – Design of Mechatronic Systems (1 CU)
	MEAM 520 – Introduction to Robotics (1 CU)
	or comparable approved by the Director
Design Breadth (1 CU)	
	ARCH 724 – Technology in Design: Immersive Kinematics/Physical Computing: Body of Site (1 CU)
	ARCH 726 – Furniture Design as Strategic Process (1 CU)
	ARCH 737 Semi-Fictious Realms (1 CU)
	ARCH 739 – Architecture of Health (1 CU)
	ARCH 743 – Form and Algorithm (1 CU)
	ARCH 751 – Ecology, Technology, and Design (1 CU)
	CPLN 571 – Sensing the City (1 CU)
	DSGN 506– Design 21: Design After the Digital Age (1 CU)
	DSGN 517– Cultures of Making (1 CU)
	DSGN 528 – Functions for Form and Material (1 CU)
	DSGN 569 – Typography (1 CU)
	DSGN 540 – UX and UI Design (1 CU)
	DSGN 634 – Art of the Web: Interactive Concepts for Art & Design (1 CU)
	DSGN 635 – 3D Computer Modeling (1 CU)
	DSGN 636 – Art, Design, and Digital Culture (1 CU)
	DSGN 637 – Information Design & Visualization (1 CU)
	DSGN 566 – Graphic Design with Creative Technologies (1 CU)
	DSGN 570 – Graphic Design Practicum (1 CU)
	DSGN 678 – Interfacing Cultures: Designing for Mobile, Web & Public Media (1 CU)
	IPD 516 – Advanced Mechatronics in Reactive Spaces (1 CU)
	IPD 521 (ARCH 721) – Designing Smart Objects for Play and Learning (1 CU)
	IPD 527 (ARCH 727) – Industrial Design I (1 CU)
	IPD 528 (ARCH 728) – Design of Contemporary Products (1 CU)
	IPD 544 (ARCH 744) – Digital Fabrication (in Architecture) (1 CU)
	IPD 568 (DSGN568) – Interactive Design Studio: Biological Design (1 CU)
	Or comparable approved by the Director
Business Breadth (1 CU)	
	BDS 501 – Behavioral Science: Theory and Application of Experimental Methods (1 CU)
	BDS 512 – Power, Pers. & Influence (1 CU)

	BDS 521 – Judgments & Decisions (1 CU)
	***EAS 545 – Engineering Entrepreneurship I (1 CU)
	EAS 546 – Engineering Entrepreneurship II (1 CU)
	EAS 512 – Engineering Negotiation (1 CU)
	EAS 549 – Engineering Entrepreneurship Lab (1 CU)
	ENVS 669 – Corporate Sustainability Strategies (1 CU)
	ESE 540 – Engineering Economics (1 CU)
	FNCE 750 – Venture Capital and the Finance of Innovation (1 CU)
	HCMG 853 – Management and Strategy in Medical Devices (1 CU)
	HCMG 867 – Health Care Entrepreneurship (0.5 cu)
	MGMT 729 – Intellectual Property Strategy for the Innovation – Driven Enterprise (0.5 CU)
	MGMT 731 – Technology Strategy (1 CU)
	MGMT 740 – Leading Effective Teams (0.5 CU)
	MGMT 801 – Entrepreneurship (0.5 CU)
	MGMT 802 – Innovation, Change & Entrepreneurship (0.5 CU)
	MGMT 804 – Venture Capital and Entrepreneurial Management (0.5 CU)
	MGMT 806 – Venture Implementation (1 CU)
	MGMT 810 – Social Entrepreneurship (1 CU)
	MGMT 812 – Social Entrepreneurship (0.5 CU)
	MKTG 611 – Marketing Management (0.5 CU)
	MKTG 612 – Dynamic Marketing Strategy (0.5 CU)
	MKTG 711 – Consumer Behavior (1 CU)
	MKTG 712 – Data and Analysis for Marketing Decisions (1 CU)
	MKTG 721 – New Product Management (0.5 CU)
	MKTG 727 – Marketing and Electronic Commerce (0.5 CU)
	MKTG 730 – Digital Marketing (1 CU)
	MKTG 737 – Brian Science F/Business (1 CU)
	MKTG 741 – Entrepreneurial Marketing (1 CU)
	MKTG 753 – New Product Management (1CU)
	MKTG 756 – Marketing Research (1 CU)
	MKTG 770 – Digital, Social and E-Commerce Marketing (1 CU)
	MKTG 776 – Applied Probability Models in Marketing (1 CU)
	MKTG 809 – Special Topics: Experiments for Business Decision Making (1 CU)
	MKTG 850 – Special Topics: Consumer Neuroscience (0.5 - 1 CU)
	OIDD 612 – Business Analytics (1 CU)
	OIDD 614 – Innovation (1/2 CU)
	OIDD 651– Innovation, Problem Solving and Design (1 CU)
	OIDD 662 – Enabling Technologies (1 CU)
	OIDD 691 – Negotiations (1 CU)
	Or comparable approved by the Director
	Elective (2 CU) Two additional graduate level courses in either engineering, design, business or independent study or another area pertinent to the individual’s specific area of interest or study. Electives should be chosen from the breadth lists above, from the elective list below or with advisor approval.
	IPD 509 – Need Finding (1 CU)
	IPD 525 – Ergonomics/Human Factors Based Product Design (1 CU)
	Or comparable approved by the Director

Curriculum for MSE:IPD Program
10 CU + 2 Semesters of Seminar

Core Courses (6 CU)

IPD 514 – Design for Manufacturability (1 CU)
IPD 551 – Design Process (1 st Semester) (1 CU)
IPD 552 – Problem Framing (2 nd Semester) (1 CU)
IPD 799 – Final Project (3 rd Semester) (1 CU)
IPD 799 – Final Project (4 th Semester) (1 CU)
MEAM 510 – Design of Mechatronic Systems (1 CU)

Engineering Breadth (2 CU)

BE 514 – Rehab Engineering & Design (1 CU)
CIS 519 – Applied Machine Learning (1 CU)
CIS 545 – Big Data Analytics (1 CU)
CIS 557 – Programming for the web (1 CU)
CIS 561 – Computer Animation (1 CU)
CIT 590 – Programing Languages and Techniques (1 CU)
ENGR 566 – APOC Design I (1 – 2 CUs, with advisor approval)
ESE 516 – IoT Edge Computing (1 CU)
ESE 545 – Data Mining (1 CU)
IPD 501 – Integrated Computer-Aided Design, Manufacturing, and Analysis (1 CU)
IPD 516 – Advanced Mechatronics in Reactive Spaces (1 CU)
IPD 525 – Ergo/Human Fac. Based Product Design (1 CU)
IPD 529 – Designing Connected Objects and Experiences (1 CU)
MEAM 508 – Materials and Manufacturing for Mechanical Design (1 CU)
MEAM 520 – Introduction to Robotics (1 CU)
MEAM 527 – Finite Element Analysis (1 CU)
MEAM 535 – Advanced Dynamics (1 CU)
MEAM 554 – Mechanics of Materials (1 CU)
Or comparable approved by the Director

Design Arts Breadth (1 CU)

ARCH 724 – Technology in Design: Immersive Kinematics/Physical Computing: Body of Site (1 CU)
ARCH 726 – Furniture Design as Strategic Process (1 CU)
ARCH 737 – Semi-Fictitious Realms (1 CU)
ARCH 739 – Architecture of Health (1 CU)
ARCH 742 – Function of Fashion Architecture (1 CU)
ARCH 743 – Form and Algorithm (1 CU)
ARCH 751 – Ecology, Technology, and Design (1 CU)
ARCH 780 – Arch in the Schools (1 CU)
CPLN 571 – Sensing the City (1 CU)
DSGN 506 – Design 21: Design After the Digital Age (1 CU)
DSGN 517– Cultures of Making (1 CU)
DSGN 540 – UX and UI Design (1 CU)

DSGN 566 – Graphic Design (1 CU)
DSGN 569 – Typography
DSGN 570 – Graphic Design Practicum (1 CU)
DSGN 634 – Art of the Web: Interactive Concepts for Art & Design (1 CU)
DSGN 636: Art, Design, and Digital Culture (1 CU)
DSGN 637 – Information Design & Visualization (1 CU)
DSGN 678 – Interfacing Cultures: Designing for Mobile, Web & Public Media (1 CU)
IPD 516 – Advanced Mechatronics in Reactive Spaces (1 CU)
IPD 521 (ARCH 721) – Designing Smart Objects for Play and Learning (1 CU)
IPD 527 (ARCH 727) – Industrial Design I (1 CU)
IPD 528 (ARCH 728) – Design of Contemporary Products (1 CU)
IPD 530 (ARCH 730) – Building Product Design (1 CU)
IPD 532 (ARCH 632) – Surface Effects (1 CU)
IPD 544 (ARCH 744) – Digital Fabrication (in Architecture) (1 CU)
IPD 568 (DSGN 568) – Interactive Design Studio: Cultures of Making (1 CU)
OIDD 659 – Advanced Tools & Methods for Product Design (1 CU)
Or comparable approved by the Director
Business Breadth (1 CU)
BDS 501– Behavioral Science: Theory and Application of Experimental Methods (1 CU)
BDS 512 – Power, Pers. & Influence (1 CU)
BDS 521 – Judgments & Decisions (1 CU)
EAS 512 – Engineering Negotiation (1 CU)
***EAS 545 – Engineering Entrepreneurship I (1 CU)
EAS 546 – Engineering Entrepreneurship II (1 CU)
EAS 549 – Eng. Entrep. Lab (1 CU)
ENVS 669 – Corporate Sustainability Strategies (1 CU)
ESE 540 – Engineering Economics (1 CU)
FNCE 750 – Venture Capital and the Finance of Innovation (1 CU)
HCMG 867 – Health Care Entrepreneurship (0.5 CU)
MKTG 741 – Entrepreneurial Marketing (0.5 CU)
MGMT 801 – Entrepreneurship (1/2 CU)
MGMT 810 – Social Entrepreneurship (1 CU)
MKTG 611 – Marketing Management (0.5 CU)
MKTG 612 – Dynamic Marketing Strategy (0.5 CU)
MKTG 711 – Consumer Behavior (1 CU)
MKTG 712 – Data and Analysis for Marketing Decisions (1 CU)
MKTG 721 – New Product Management (0.5 CU)
MKTG 727 – Marketing and Electronic Commerce (0.5 CU)
MKTG 730 – Digital Marketing & Elec. Comm. (1 CU)
MGMT 731 – Technology Strategy (1 CU)
MKTG 737 – Brian Science F/Business (1 CU)
MGMT 740 – Leading Effective Teams (0.5 CU)
MKTG 753 – New Product Management (1CU)
MKTG 756 – Marketing Research (1 CU)
MKTG 770 – Digital, Social and E-Commerce Marketing (1 CU)
MKTG 776 – Applied Probability Models in Marketing (1 CU)
MGMT 729 – Intellectual Property Strategy for the Innovation – Driven Enterprise (0.5 CU)
MGMT 802 – Change, Innovation & Entrepreneurship (0.5 CU)

MGMT 804 – Venture Capital and Entrepreneurial Management (0.5 CU)
MGMT 806 – Venture Implementation (1 CU)
MGMT 812 – Social Entrepreneurship (0.5 CU)
OIDD 612 – Business Analytics (1 CU)
OIDD 614 – Innovation (0.5 CU)
OIDD 615 – Operations Strategy (0.5 CU)
OIDD 652 – Design of Web-Based Products and Services (1/2 CU)
OIDD 656 – Operations Strategy and Process Management (1 CU)
OIDD 662 – Enabling Technologies (1 CU)
OIDD 691 – Negotiations (1 CU)
Or comparable approved by the Director

Notes

* *If a course is cross-listed, students must register for the IPD section when available.*

** *Any deviation from the above must be approved by the Director.*

*** *EAS 545 cannot be counted towards both the foundation and business breadth.*

4. ATTENDANCE AT SEMINARS AND PROJECT PRESENTATIONS

The attendance of all full-time graduate students at IPD seminars and final presentations is mandatory. There are many good reasons why students should attend departmental seminars and presentations even when the seminars are not directly linked to their areas of research. For example:

- They provide an opportunity to learn about the state-of-the-art companies, designs, technologies, ideas, etc.
- They provide an opportunity for the student to get acquainted with people from other institutions and companies and get an inside view of their culture and ideas. On more than one occasion, during job interviews, interviewers have been known to mention a visit to Penn and delivering a seminar.
- They are meaningful simply to learn what new and interesting things are going on in the world.
- They are an excellent opportunity to get together as a department. It is hoped that a full attendance at these seminars will help create departmental spirit and cohesiveness.

Seminar Course IPD 699

The seminar course has been established so that students are recognized for their seminar attendance as well as to encourage students to attend. There are no quizzes, tests, or homework. There is also NO tuition charged for IPD 699. The course is graded S/U and does not count towards full-time enrollment status. To obtain a satisfactory (S) grade, the student must attend the IPD seminars. To obtain their degree, IPD students are required to accumulate 2 seminar course credits (IPD 699). EAS 896 Professional Career Development may be used to substitute one unit/semester of IPD 699. EAS 896 is typically offered only in the fall semester and is appropriate for master’s students in their second year (third semester) of study. There is a fee associated with registering for EAS 896. Under special circumstances, e.g., in a case of a conflict with a course offering, the student may waive the seminar requirement for that particular semester by petitioning the Director. Part-time students are exempted from the mandatory overall seminar attendance requirement although they are strongly encouraged to attend all possible seminars. Submatriculant/Accelerated Master’s students are full-time and therefore must accumulate 2 seminar course credits prior to graduation.

5. GENERAL INFORMATION

Registration:

All students enrolled in a degree program are required to be continuously registered. Three courses per semester (including studio project research, such as IPD 799 Final Project and IPD 599 Independent Study) is a normal full-time load for all students. The seminar course, IPD 699, does NOT count towards full-time status. EAS 896 does count towards full-time status. Students must always consult with the Director or Executive Director if a deviation from the normal load is desired or being contemplated. Students must meet with their advisor to discuss course selection and obtain advisor's sign-off prior to registration.

Leaves of Absence:

Continuous registration as a graduate student is required unless a formal leave of absence is granted by the Dean of the student's school. A Leave of Absence (LOA) may be requested by submitting a request via <https://grad.seas.upenn.edu/student-handbook/forms/>. More detailed information regarding LOA is available on the following website: <https://grad.seas.upenn.edu/student-handbook/>.

Obsolescence:

The maximum time allowed for the completion of all master's degree requirements is seven years. Course units that are older than seven years may not be counted toward the degree requirements.

Changes in Course Program:

Students may add or drop courses without penalty during a semester if it is done by the deadline listed in the current graduate bulletin. The Director or Executive Director must be informed of the student's decision beforehand and must receive their approval. International students must consult with the office of International and Student Scholar Services before dropping a course.

Grades, Credits, and Academic Standing:

The grading system is as follows: A (4.0), Excellent; B (3.0), Good; C (2.0), Fair; D (1.0), Poor; F (0.0), Failure. A course in which an F was obtained must be taken again; however, the F will remain on the student's transcript. Courses for which a passing grade was obtained cannot be retaken for credit. An incomplete (I) or a no report (NR) are temporary notations and students are allowed a period of one semester to clear them from their transcripts. Failure to clear an "incomplete" or "no report" within the allotted time will result in an automatic grade of F. *No students will be permitted to graduate if there are any Incomplete, Unsatisfactory, or No Report notations on their records.*

M:IPD and MSE:IPD students in the School of Engineering are expected to maintain at least a B- average (2.7) in their work. A student whose record falls below a B- average will be put on academic probation and may be required to withdraw; graduation requires a minimum of a B- average.

Academic Integrity

Each student is expected to abide by Penn's Code of Academic Integrity (<https://catalog.upenn.edu/pennbook/code-of-academic-integrity/>). Students should not knowingly use any dishonest method to gain an unfair advantage over other students in academic pursuits, especially through, but not limited to:

- Giving or receiving any unauthorized aid on an assignment or exam, including working in groups on any assignment that has been designated as individual by the professor;

- Misrepresenting the originality of one's work (plagiarism), particularly through direct copying of work and through failing to note the contributions of others, except as permitted by the instructor;
- Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor.

If there is any doubt as to what is permissible, it is the student's responsibility to ask the instructor. Students caught cheating will be subject to disciplinary action, which may include referral to the Office of Student Conduct. For more information, please see the Student Guide on Academic Integrity: <https://catalog.upenn.edu/pennbook/code-of-academic-integrity/>.

6. INDEPENDENT STUDY

Independent Study courses (IPD 599) are vehicles to accommodate special interests of the students which are not served through the regular courses. They create opportunities for mini-projects and a mentoring relationship between the student and the faculty. IPD 599 can only be counted towards the elective requirement and must be a topic independent of your final project work.

Since independent studies are less structured than regular courses and typically do not come with strict deadlines, occasionally students tend to fall behind in their work. There is also the possibility of miscommunication between the student and the faculty on the objectives, extent, scope, and the grading method for the independent study. The purpose of this policy is to set the rules for an independent study with the objectives of maintaining academic rigor and minimizing any potential for miscommunication.

An independent study course should require effort comparable to that of a regular course, about 9 hours a week or a total of 126 hours per semester. The student should meet the faculty member administering the independent study (the advisor) on a regular basis, at least once a week. It is the student's responsibility to schedule these weekly meetings. Experience indicates that failure to maintain regular contact with the student's advisor can lead to a less than satisfactory performance in the independent study course. In the absence of regular contact, the student stands the risk of not being focused leading to an impression of dereliction. The key to a successful independent study is a steady effort throughout the semester. The student should not expect to be able to cram a semester's work into a few days of intensive work at the end of the semester.

Prior to the beginning of the semester in which the student contemplates taking the independent study, the student and their advisor should develop a brief document. The first paragraph of the document should describe the objectives, scope, and content of the independent study. The second paragraph should state how the independent study will be evaluated and how the student will be graded. The document should be signed by both the student and their advisor, and it should be submitted to the program Director for approval before the beginning of the semester.

At the end of the independent study, the student should prepare a brief report specifying what material was covered during the independent study, those objectives that were met and those that were not. If objectives were not met, a clear explanation should be provided as to why such objectives were not met. This document should also be signed by the student and their advisor, and it will be included in the student's file.

It is the student's responsibility to make sure that these guidelines are followed. Failure to follow these guidelines may result in the student not receiving credit for the independent study.

7. POLICY ON TRANSFER OF CREDIT UNITS EARNED IN OTHER INSTITUTIONS

IPD students may apply to obtain credit for up to two approved graduate courses taken at another institution. These courses are referred to as transfer courses. For on campus programs, courses taken under a certificate program, study abroad, or online are not allowed and they will not be reviewed or considered for transfer. Per University policy, courses counted towards an undergraduate degree will not be considered for graduate credit unless in an approved and awarded submatriculation/accelerated master's program. Transfer credit must be taken prior to matriculation at Penn. **Courses are held to a time limit of five (5) years** (<https://grad.seas.upenn.edu/student-handbook/academic-options/#transfer>). Dual Degree and Submatriculant/Accelerated Master's students who are double counting courses towards both degrees will not be permitted to transfer courses in addition to double counting courses. Transfer courses must be graduate level courses in which at least a B grade has been earned. To obtain credit for courses taken at other institutions, the following procedure must be followed:

For each transfer course, obtain information about the, e.g. course description, syllabus, homeworks and/or exams and the title of the textbook prescribed for the course.

Identify a professor who teaches a similar course at Penn. If a similar course is not offered at Penn, identify a professor whose areas of expertise are in the general area of the course to be transferred. The professor should certify that the course is of similar level to a graduate course offered at Penn or, if a similar course is not offered at Penn, that the course qualifies for Penn students to take at the graduate level if it were offered here.

Submit a petition on a standard form (www.seas.upenn.edu/graduate/pdf/g-transfer-credit.pdf) to the program Director. Attach to the petition a copy of the transcript, the professor's certification, and documents and information noted on the standard form.

8. FINAL PROJECT

The IPD Final Project is the output of two semesters of interdisciplinary master's study combining engineering, design arts and business. In keeping with the nature of this unique major, every student aims to have a committee of advisors that include three different disciplines. This section is intended to help set the expectations of work on the part of the advisors and students.

Final Project Expectations

A viable IPD Project should include the following elements or qualities:

- Be a holistic offering, explicitly addressing design, engineering and business elements
- Solve a real problem in the world
- Be both commercially viable and socially valuable
- Be innovative: either entirely new to the world, a fundamental improvement on something that exists, or something that is translated from one domain to another in a new way
- Be user-centered
- Be prototyped for the purposes of evaluation and iteration
- Be developed and prototyped to the fullest extent possible
- Contribute to the discourse on product design

In addition to the aforementioned requirements, students who pursue the MSE:IPD degree track (Master's of Science in Engineering) of the IPD program will be expected to complete final projects that demonstrate engineering knowledge and expertise, including the ability to implement the technology of the product, innovation in the technology of the products, the ability to fabricate the product, analysis of engineering performances, iteration and improvements of the product based on that analysis.

Team projects

Interdisciplinary group work is a cornerstone of the program. We expect IPD Final Projects to be team projects. Ideally teams will be formed by two or three students from different backgrounds. The expected work and contributions from each member should to be clearly delineated when teams form and on an ongoing basis.

Students will work together on one project, however they will submit separate project proposal (with shared text) but with emphasis on their respective parts of the work.

More detail about the Final Project expectations will be provided in the course syllabus.

9. SUBMATRICULATION/ACCELERATED MASTER'S

Outstanding undergraduate students at the University may apply for Submatriculation/Accelerated Master's (Fall 2018 undergraduate matriculation or later) for either of the IPD master's degree programs and take graduate-level courses as electives during their senior year. After fulfilling the requirements of both programs, the student will receive a BSE and a MSE or a BSE and a M:IPD degree. Undergraduates at the University of Pennsylvania may double-count up to three graduate level courses taken while enrolled as a submatriculant/accelerated master's towards both the undergraduate and the graduate degrees. If studio work is begun before the end of the senior year (taking IPD 551 in the fall and IPD 552 in the spring), the degree may be completed in two extra semesters of study. To complete both degrees in only five years, students can consider:

- Taking the foundation courses during the undergraduate program.
- Take two extra graduate-level courses (cannot be counted towards the BSE degree) during the undergraduate program.
- Take two of the four IPD studio classes (IPD 551 and IPD 552) in the 4th (senior undergraduate) year.

Students enrolled as a submatriculant/accelerated master's can only count graduate courses taken at Penn towards the master's degree. No transfer credit, study abroad, or study away courses will be accepted.

Applications to the program must be completed by the February 1st deadline and before the end of the junior year. Submatriculation/Accelerated Master's applications are available via the Penn Engineering website (<https://ugrad.seas.upenn.edu/student-handbook/programs-options/submatriculation-engineering/>).

10. DUAL DEGREE PROGRAMS

Students may apply to a dual degree program and receive an M:IPD or MSE degree in Integrated Product Design and any of the other disciplines in the Engineering School such as Electrical and Systems Engineering, Bioengineering, Computer Science, Chemical and Biomolecular Engineering, and Materials Science Engineering if admitted. The dual degree program requires the completion of at least 16 courses (not including foundation courses) and satisfaction of the degree requirements of each department in which

the student wishes to major. To enroll in this program, the student must complete an application form, list the course plan for both programs and obtain the approval from the Director/Graduate Group Chairman of each department. Applications for this program are available at www.seas.upenn.edu/prospective-students/graduate/admissions.php

A dual degree is also offered with the Stuart Weitzman School of Design (Architecture) and the Wharton School. Students must satisfy independent admission requirements for the School of Engineering, The Wharton School of Business and the Stuart Weitzman School of Design (Architecture). This means that the appropriate standardized tests, such as the GRE, GMAT or MCAT, a completed application form and fee, transcript, and recommendations, must be sent to each school independently. Dual degree students can double count up to three courses towards both programs. However, seven course units taken only for the IPD degree must be within Engineering.

Please contact the appropriate School for more information about specific application and degree requirements.

11. SUMMER STUDIES

There are several possibilities for scholarly activities by graduate students at the University during the summer, including:

- Independent study (IPD 599) with an instructor willing to act as a supervisor during the summer.
- Course work outside SEAS, as well as a limited number of regular courses occasionally offered by some SEAS departments. The Director must approve summer school courses.

12. RECORDS

The official graduate student records are kept in 111 Towne Building; transcripts can be viewed on PennInTouch at https://portal.apps.upenn.edu/penn_portal/intouch/splash.html Graduate students are encouraged to periodically check the accuracy of their records and to bring any discrepancies to the attention of the Director.