### DIGITAL MEDIA DESIGN, BSE

The Digital Media Design (DMD) program is an interdisciplinary major in the School of Engineering and Applied Science at Penn. As a full-fledged Bachelor of Science in Engineering (BSE) degree, it combines major coursework in computer graphics within the Computer & Information Science Department, communication theory courses from the Annenberg School and Fine Arts courses from Penn's School of Design. The program was designed for students who have an interest in computer graphics, animation, games, and the design of virtual reality environments and interactive technologies.

**For more information:** [https://www.seas.upenn.edu/prospective-students/undergrad/majors/digital-media-design/](https://www.seas.upenn.edu/prospective-students/undergrad/majors/digital-media-design/)

### Digital Media Design (DMD) Major Requirements

37 course units are required.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Course Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 1100</td>
<td>Introduction to Computer Programming</td>
<td>1</td>
</tr>
<tr>
<td>CIS 1200</td>
<td>Programming Languages and Techniques I</td>
<td>1</td>
</tr>
<tr>
<td>CIS 1210</td>
<td>Programming Languages and Techniques II</td>
<td>1</td>
</tr>
<tr>
<td>CIS 2400</td>
<td>Introduction to Computer Systems</td>
<td>1</td>
</tr>
<tr>
<td>CIS 2620</td>
<td>Automata, Computability, and Complexity</td>
<td>1</td>
</tr>
<tr>
<td>CIS 3200</td>
<td>Introduction to Algorithms</td>
<td>1</td>
</tr>
<tr>
<td>CIS 4600</td>
<td>Interactive Computer Graphics</td>
<td>1</td>
</tr>
<tr>
<td>or CIS 5600</td>
<td>Interactive Computer Graphics</td>
<td></td>
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</tbody>
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**Two of the following:**

- CIS 4610 Advanced Rendering
  - or CIS 5610 Advanced Computer Graphics
  - or CIS 4620 Computer Animation
  - or CIS 5620 Computer Animation
  - or CIS 4550 Internet and Web Systems
  - or CIS 5550 Internet and Web Systems

- CIS 4670 Scientific Computing
  - or CIS 5670 Scientific Computing

- CIS 4970 DMD Senior Project

- CIS Electives **1**

**Math & Natural Science**

- MATH 1400 Calculus, Part I
- MATH 1410 Calculus, Part II
  - or MATH 1610 Honors Calculus
- MATH 2400 Calculus, Part III
  - or MATH 2600 Honors Calculus, Part II
  - or MATH 3120 Linear Algebra
  - or MATH 3130 Computational Linear Algebra
  - or MATH 3140 Advanced Linear Algebra
- CIS 1600 Mathematical Foundations of Computer Science
- CIS 2610 Discrete Probability, Stochastic Processes, and Statistical Inference

**or ESE 3010 Engineering Probability**

**or STAT 4300 Probability**

| MEAM 1100 | Introduction to Mechanics                       | 1.5          |
| MEAM 1470 | and Introduction to Mechanics Lab               |              |
| or PHYS 0150 | Principles of Physics I: Mechanics and Wave Motion |          |
| or PHYS 0170 | Honors Physics I: Mechanics and Wave Motion      |              |

**Select from the following list:**

- BIOL 1101 Introduction to Biology A
- BIOL 1121 Introduction to Biology - The Molecular
  - & BIOL 1124 Biology of Life
  - and Introductory Organismal Biology Lab

- CHEM 1011 Introduction to General Chemistry I
  - & CHEM 1101 and General Chemistry Laboratory I

- ESE 1120 Engineering Electromagnetics

- PHYS 0151 Principles of Physics II: Electromagnetism and Radiation
- PHYS 0171 Honors Physics II: Electromagnetism and Radiation

**Math or Natural Science Elective**

**DMD Electives**

**Advisor Approval Required**

- FNAR 0010 Drawing I
  - or FNAR 2200 Drawing Investigations
  - or FNAR 1080 Figure Drawing I

- DSGN 1030 3-D Computer Modeling
  - or DSGN 2010 Digital Figure Modeling

**Select 4 DMD Electives** **2**

**General Electives** **3**

- Select 5 Social Science or Humanities courses
- Select 2 Social Science or Humanities or Technology in Business & Society courses

**Free Elective**

- Select 1 free elective **4**

**Total Course Units** **37**

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1. A CIS Elective is a CIS or NETS engineering course at the 1000 level or above, or ESE 3500 Embedded Systems/Microcontroller Laboratory (NOTE: not all CIS/NETS courses are engineering courses; please see the SEAS Undergraduate Handbook ([https://ugrad.seas.upenn.edu/student-handbook/courses-requirements/engineering-courses/](https://ugrad.seas.upenn.edu/student-handbook/courses-requirements/engineering-courses/)). At most, one CU of 1000-level coursework may be used as a CIS Elective.

2. Select courses from offerings in the following categories: COMM, FNAR, CIMS, DSGN, THAR, MKTG, ARTH, IPD, MUSC, EDUC. Courses from other categories require advisor approval.

3. Must include a Writing Seminar (a list of approved Writing Seminars can be found in the SEAS Undergraduate Handbook ([https://ugrad.seas.upenn.edu/student-handbook/courses-requirements/writing-courses/](https://ugrad.seas.upenn.edu/student-handbook/courses-requirements/writing-courses/)). At most, one CU of 1000-level coursework may be used as a CIS Elective.

4. Approval is required.

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2023 and later. Students should...
consult with their academic program regarding final certifications and requirements for graduation.