Illinois Mathematics and Science Academy®

igniting and nurturing creative, ethical, scientific minds
that advance the human condition

Founding Member of the National Consortium for Specialized Secondary Schools of Mathematics Science and Technology

The internationally recognized Illinois Mathematics and Science Academy® (IMSA) develops creative, ethical leaders in science, technology, engineering and mathematics. As a teaching and learning laboratory created by the State of Illinois, IMSA enrolls academically talented Illinois students (grades 10-12) in its advanced, residential college preparatory program, and it serves thousands of educators and students in Illinois and beyond through innovative instructional programs that foster imagination and inquiry. IMSA also advances education through research, groundbreaking ventures and strategic partnerships. (www.imsa.edu)

IMSA employs 57 full-time teaching faculty members, all of whom have advanced degrees, with 50% holding doctorate degrees. In addition, 24% of faculty members are certified by the National Board for Professional Teaching Standards (NBPTS).

IMSA fosters a collaborative learning environment that is problem-centered, inquiry-based and integrative. IMSA’s students are engaged in rich opportunities to work with prominent researchers, explore questions of their own, champion their ideas for product development and make significant leadership contributions.

Student Inquiry and Research (SIR) - is an interactive partnership that pairs students with on-campus and off-campus professionals so that they can actively investigate a topic about which they are passionate. The SIR standards focus on planning, investigating, analyzing and communicating. Requirements include a proposal, investigation journal/notebook, active engagement, progress report, abstract, investigation paper and presentation at IMSAloquium.

Total Applied Learning for Entrepreneurs (TALENT) - provides students with experiential learning opportunities in all matters related to bringing an idea to the marketplace to solve real world problems. TALENT aims to instill the thinking patterns and mindset of an entrepreneur and to engage students in activities that include, but are not limited to, understanding intellectual property, developing a business plan, developing products, securing funding, networking, communicating ideas and starting a business.

Independent Study - is a student-selected learning experience that provides the opportunity to personalize learning beyond the IMSA course offerings. An Independent Study may be conducted by a senior (or junior with Principal’s permission) under the direction of an IMSA faculty member for one or two semesters.

Leadership Education - provides students with opportunities to become leaders within the Academy, in the community and in the world. Navigation is a forum for sophomores to process what they are experiencing in various aspects of their life at IMSA, academically, socially and emotionally. Leadership Education and Development engages all students through open classroom discussion, meaningful activities, real-life applications and personal reflection to develop their passions and impact social change. Residence Life is committed to developing students’ personal and social skills along with their academic talents. The residence halls are places where living and learning meet.

Service Learning - Students are required to complete 200 hours of service during their three years at IMSA.

In light of IMSA’s selective admission process and in order to promote collaborative exploration and discovery, the Academy does not provide grade point averages or class rankings.
### Science
4.0 credit minimum
- **Core Courses** (Sophomore)
  - Methods in Scientific Inquiry
  - Scientific Inquiries - Biology
  - Molecular Genetics
  - Organisms and Ecosystems
- **Biology Electives**
  - Evolution, Biodiversity and Ecology
  - Microbes and Disease
  - Molecular and Cellular Biology
  - Physiology and Disease
  - Seminar in Biology: Stem Cell Biology
  - Seminar in Biology: Virology
- **Chemistry Electives**
  - Advanced Chemistry - Structure and Properties
  - Advanced Chemistry - Chemical Reactions
  - Biochemistry
  - Environmental Chemistry
  - Organic Chemistry I
  - Organic Chemistry II
- **Physics Electives**
  - Applied Engineering (2011-2012)
  - Biophysics
  - Engineering
  - Modern Physics
  - Physics: Applied Mechanics
  - Physics: Light and Sound
  - Physics: Calculus-based Mechanics
  - Physics: Calculus-based Electricity and Magnetism
  - Planetary Science

### Mathematics
3.0 credit minimum
- **Calculus Core Courses**
  - AB Calculus I
  - AB Calculus II
  - BC Calculus I
  - BC Calculus II
  - BC Calculus I/II
- **Pre-Calculus Electives**
  - Discrete Mathematics
  - Graph Theory with Applications
  - Polyhedra and Geometric Sculpture
  - Problem Solving
  - Statistical Experimentation and Inference
  - Statistical Exploration and Description
- **Post-Calculus Electives**
  - Advanced Problem Solving
  - Differential Equations
  - Introduction to Algebraic Structures I
  - Introduction to Algebraic Structures II
  - Multi-Variable Calculus
  - Number Theory
  - Theory of Analysis
- **Computer Science Electives**
  - Advanced Programming Computer Science
  - Computational Thinking
  - Object Oriented Programming
  - Robotics Programming
  - Web Technologies I
  - Web Technologies II

### English
3.0 credit minimum
- **Core Courses** (Sophomore)
  - Literary Explorations I
  - Literary Explorations II
- **Junior/Senior Electives**
  - 20th Century Poetry
  - Creative Writing Workshop
  - Film Study: History and Criticism
  - Modern Theater
- **Senior Electives**
  - Romantic Poetry and Prose
  - Speculative Fiction Studies
  - The Idea of the Individual
  - Topics in World Literature: Victorian Fiction

### Social Science
2.5 credit minimum
- **Core Courses** (Sophomore)
  - American Studies
- **Junior Electives**
  - Ancient World Religion and Philosophy
  - Conflict in World History
  - Medieval Societies
  - Power and Authority in History
- **Senior Electives**
  - History of Astronomy
  - History of Biology
  - History of Philosophy
  - History of Technology and Culture
  - International Relations
  - Macroeconomics
  - Microeconomics
  - Political Theory
  - United States Government and the Constitution

### World Languages
2.0 credit minimum
- **French**
  - I
  - II
  - III
  - IV
  - V
- **German**
  - I
  - II
  - III
  - IV
  - V
- **Japanese**
  - I
  - II
  - III
  - Mandarin Chinese I
  - Mandarin Chinese II
  - Mandarin Chinese III
- **Russian**
  - I
  - II
  - III
  - IV
  - Spanish II
  - Spanish III
  - Spanish IV
  - Spanish V

### Fine Arts
0.5 credit minimum
- **Music**
  - Chamber Choir
  - Chamber Strings
  - Concert Band
  - Concert Choir
- **Visual Arts**
  - Advanced Ceramics
  - Art Design
  - Ceramics
  - Photography

### Wellness Education
1.0 credit minimum
- **Core Course** (Sophomore)
  - Moving and Learning
- **Wellness Electives**
  - Dance
  - Individualized Physical Fitness
  - Lifeguarding and Water Polo
- **Wellness Electives**
  - Movement and Relaxation
  - Outdoor and Indoor Games
  - Tennis and Badminton

### Independent Learning
Only Pass/Fail grades awarded
- **Independent Study**
- Student Inquiry and Research
- Total Applied Learning for Entrepreneurs

**Total graduation requirement:** 17 credits. Eight (8) credits must be in mathematics and science. For information on course descriptions, please visit our Web site: www.imsa.edu/learning/cac
Advanced Placement (AP) Examinations for 2011–2012 School Year

Although IMSA does not offer AP courses, 784 AP examinations were administered to 329 students.

<table>
<thead>
<tr>
<th>Examinations</th>
<th>Biology</th>
<th>Calculus AB</th>
<th>Calculus BC</th>
<th>Chemistry</th>
<th>English Language</th>
<th>Physics C: E &amp; M</th>
<th>Physics C: Mech</th>
<th>Statistics</th>
<th>US History</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of Students Tested</strong></td>
<td>97</td>
<td>24</td>
<td>154</td>
<td>134</td>
<td>40</td>
<td>38</td>
<td>46</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td><strong>Average Score</strong></td>
<td>3.8</td>
<td>3.2</td>
<td>4.3</td>
<td>3.1</td>
<td>4.0</td>
<td>2.9</td>
<td>4.0</td>
<td>4.2</td>
<td>3.3</td>
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</table>

A Sample Grade Distribution Report for Junior Course Enrollment (2011–2012)

<table>
<thead>
<tr>
<th>Course</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical Investigations IV (Fall)</td>
<td>38</td>
<td>19</td>
<td>12</td>
<td>25</td>
<td>10</td>
<td>3</td>
<td>11</td>
<td>2</td>
<td>1</td>
<td>120</td>
</tr>
<tr>
<td>BC Calculus I (Spring)</td>
<td>11</td>
<td>22</td>
<td>33</td>
<td>8</td>
<td>10</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>102</td>
</tr>
<tr>
<td>BC Calculus II (Spring)</td>
<td>13</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>49</td>
</tr>
<tr>
<td>Advanced Chemistry–Structure and Properties (Fall)</td>
<td>30</td>
<td>38</td>
<td>14</td>
<td>19</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>128</td>
</tr>
<tr>
<td>Advanced Chemistry–Chemical Reactions (Spring)</td>
<td>27</td>
<td>26</td>
<td>18</td>
<td>27</td>
<td>16</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>125</td>
</tr>
<tr>
<td>Microbes and Disease</td>
<td>6</td>
<td>10</td>
<td>0</td>
<td>16</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Literary Explorations III</td>
<td>11</td>
<td>57</td>
<td>41</td>
<td>60</td>
<td>21</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>204</td>
</tr>
<tr>
<td>Creative Writing Workshop</td>
<td>13</td>
<td>18</td>
<td>7</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>51</td>
</tr>
<tr>
<td>The World in the Twentieth Century</td>
<td>49</td>
<td>69</td>
<td>28</td>
<td>29</td>
<td>12</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>197</td>
</tr>
</tbody>
</table>

Explanation of Grades

- A: Exceeds course requirements
- A+: Meets course requirements, Pass with Distinction
- B: Meets course requirements
- B+: Does not meet requirements for course taken pass/fail
- C: Needs improvement
- C+: Withdrawal from course
- D: Does not meet course requirements, no credit awarded
- D+: Withdrawal from course with failing grade
- I: Does not meet course requirements, no credit awarded
- W: Withdrawal from course
- WF: Withdrawal from course with failing grade

IMSA Testing Highlights

ACT Scores - Class of 2012: Middle 50% Ranges and Means

<table>
<thead>
<tr>
<th></th>
<th>IMSA Mean (N = 190)</th>
<th>IMSA Middle 50% Range</th>
<th>Illinois College-Bound Senior Mean</th>
<th>All College-Bound Senior Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite</td>
<td>31.8</td>
<td>29.0–34.0</td>
<td>20.9</td>
<td>21.1</td>
</tr>
</tbody>
</table>

SAT I Reasoning Test - Class of 2012: Middle 50% Ranges and Means

<table>
<thead>
<tr>
<th></th>
<th>IMSA Mean (N = 212)</th>
<th>IMSA Middle 50% Range</th>
<th>Illinois College-Bound Senior Mean</th>
<th>All College-Bound Senior Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Reading</td>
<td>659</td>
<td>610-730</td>
<td>596</td>
<td>496</td>
</tr>
<tr>
<td>Math</td>
<td>713</td>
<td>670-780</td>
<td>615</td>
<td>514</td>
</tr>
<tr>
<td>Writing</td>
<td>652</td>
<td>600-710</td>
<td>587</td>
<td>488</td>
</tr>
</tbody>
</table>

SAT II Subject Tests - Class of 2012: Means

<table>
<thead>
<tr>
<th></th>
<th>IMSA Scores Reported</th>
<th>IMSA Mean</th>
<th>Illinois College Mean</th>
<th>All College Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Literature</td>
<td>25</td>
<td>710</td>
<td>644</td>
<td>604</td>
</tr>
<tr>
<td>Mathematics Level 2</td>
<td>138</td>
<td>765</td>
<td>715</td>
<td>677</td>
</tr>
<tr>
<td>Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology E</td>
<td>10</td>
<td>685</td>
<td>652</td>
<td>633</td>
</tr>
<tr>
<td>Biology M</td>
<td>34</td>
<td>698</td>
<td>686</td>
<td>654</td>
</tr>
<tr>
<td>Chemistry</td>
<td>92</td>
<td>708</td>
<td>686</td>
<td>652</td>
</tr>
<tr>
<td>Physics</td>
<td>33</td>
<td>735</td>
<td>684</td>
<td>662</td>
</tr>
</tbody>
</table>

Scholarship Recognition

Class of 2013
- 195 Total number of students in class
- 4 National Achievement Semifinalists
- 55 National Merit Semifinalists

Class of 2012
- 212 Total number of students in class
- 5 National Achievement Finalist
- 47 National Merit Finalists
- 7 National AP Scholars
- 40 AP Scholars with Distinction
- 12 AP Scholars with Honors
- 1 Intel Science Talent Search Finalist
- 3 Intel Science Talent Search Semi-finalists
- 6 Siemens Award Competition Semi-finalists
- 1 U.S. Physics Team Finalist
- 3 U.S. Physics Team Semi-finalists
- 1 U.S. A Mathematics Olympiad Qualifier
- 1 Illinois Junior Academy of Science Gold Medal Winner
- 4 National Outstanding Paper Group Award in the High School Mathematical Contest in Modeling (HiMCM)
- 8 Regional Outstanding Paper Group Award in the High School Mathematical Contest in Modeling (HiMCM)
- 1 First Place Winner (Math Team) in the Illinois Council of Teachers of Mathematics (ICTM) Contest
- 1 First Place Winner (Scholastic Bowl Team) in State
- 1 Ninth Place Winner (Science Bowl Team) in Nation
- 1 Third Place winner (Science Olympiad team) in State
- 1 First Place Winner (IMSA FIRST Robotics team) in Midwest Regional Competition
Universities and Colleges With the Largest IMSA Graduate Enrollment Classes of 2010–2012

University of Illinois Urbana-Champaign (141)
Northwestern University (18)
Illinois Institute of Technology (17)
University of Illinois Chicago (16)
Case Western Reserve University (15)
Massachusetts Institute of Technology (15)
St. Louis University (15)
University of Rochester (13)
California Institute of Technology (11)
University of Chicago (11)
Carnegie Mellon University (10)
Loyola University Chicago (9)
University of Southern California (9)
Amherst College (1)
Babson College (1)
Beloit College (1)
Benedictine University (1)
California Institute of Technology (4)
Carnegie Mellon University (2)
Case Western Reserve University (9)
Columbia College (1)
Columbia University (3)
Concordia University Wisconsin (1)
Deep Springs College (1)
DePaul University (1)
Dominican University (1)
Drexel University (2)
Duke University (2)
Earlham College (1)
Emory University (1)
Grinnell College (1)
Harvard University (1)
Harvey Mudd College (1)
Illinois Institute of Technology (3)
Illinois Wesleyan University (1)
Knox College (1)
Lake Forest College (2)
Lawrence University (2)
Loyola University Chicago (4)
Macalester College (1)
Marquette University (2)
Massachusetts Institute of Technology (3)
Michigan State University (3)
Michigan Technological University (2)
Mississippi State University (1)
New York University (1)
Northeastern University (2)
Northern Illinois University (1)
Northwestern University (2)
Pacific Lutheran University (1)
Princeton University (2)
Purdue University (1)
Reed College (4)
Rensselaer Polytechnic Institute (2)
Rice University (2)
St. Louis University (6)
Sewanee: The University of the South (1)
Southern Methodist University (1)
St. Olaf College (2)
Stanford University (2)
Stetson University (1)
Swarthmore College (1)
The Cooper Union for the Advancement (1)
The George Washington University (1)
The Ohio State University (2)
The University of Arizona (1)
The University of Tampa (1)
The University of Texas, Austin (1)

Student Population of Academy 2012–2013

<table>
<thead>
<tr>
<th>Percentage of students identifying as:</th>
<th>Male – 51%</th>
<th>Female – 49%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>45%</td>
<td>38%</td>
</tr>
<tr>
<td>White</td>
<td>38%</td>
<td>32%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>8.8%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Black</td>
<td>7.7%</td>
<td>8.6%</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>0.3%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>0.2%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>