



2003–2004
Laboratories for the 21st Century
Student Design Competition



Competition Challenge

Introduction

The first-ever **Laboratories for the 21st Century (Labs21) Student Design Competition** focuses on innovation in laboratory design and the integration of sustainable practices. The competition challenges architecture students and faculty from the United States and Canada to design a laboratory building that exemplifies high performance, low-energy design principles, in addition to meeting core architectural design considerations. For the competition, students are challenged to design a **Chemistry and Biology Laboratory building** on the campus of Georgetown University in Washington, District of Columbia.

The competition is dedicated to the late Donald Prowler, a Fellow of the American Institute of Architects and a nationally recognized professor of architecture, building climatology, and sustainability principles. As one of the core participants in the Labs21 program, Don's contributions, insight, and guidance established much of the foundation for today's successful program. He touched and inspired students, professionals, and colleagues throughout his nearly 30-year career, and so it is with profound gratitude and fond memories that we dedicate this year's competition in his name.

Administering Organization

The competition is administered by the *Association of Collegiate Schools of Architecture* (ACSA), a non-profit organization founded in 1912 to enhance the quality of architectural education. School membership in ACSA has grown from ten charter schools to over 200 schools in several membership categories. Through these schools, over 4,500 architecture faculty are represented in ACSA's membership. ACSA, unique in its representative role for professional schools of architecture, provides a major forum for ideas on the leading edge of architectural thought. Issues that will affect the architectural profession in the future are being examined today in ACSA member schools.

ACSA

1735 New York Avenue NW
Washington, DC 20006
<<http://www.acsa-arch.org>>

ACSA is committed to the principles of universal and sustainable design.

Sponsor

The competition is sponsored by the Labs21 program, a partnership program jointly offered by the *U.S. Environmental Protection Agency (EPA)* and the *U.S. Department of Energy (DOE)*, as well as *Public Works Government Services Canada*.

Cover Photograph

Project: **Georgia Public Health Laboratory**, Decatur, Georgia
Architect: Lord, Aeck & Sargent
Photo: © Jonathan Hillyer Photography, Inc. / Atlanta





Competition Program

Statement

"As a building type, the laboratory demands our attention. What the cathedral was to the 14th century, the train station was to the 19th century, and the office building was to the 20th century, the laboratory is to the 21st century. That is, it is the laboratory that embodies, in both program and technology, the spirit and culture of our age and attracts some of the greatest intellectual and economic resources of our society."

Don Prowler, FAIA. 1950-2002

Since the dawn of the scientific revolution, the evolution of the laboratory has been driven by the scientist's desire for a productive environment that allows them to conduct experiments with rigor and control, to ensure the results are authentic, replicable, and long lasting. The particular requirements for rigor and control brought about the earliest manifestations of a laboratory, which over time, has evolved into the complex and sophisticated structure of today. In essence, all laboratories, from instructional laboratories to research and testing laboratories, must provide a built environment that attracts, engages, and motivates the best of human resources available to society.

The Labs21 program was established to help ensure that these goals are achieved within the context of protecting our environment and understanding the resources required to build and operate laboratory facilities. Given the enormous impact of the built environment on the ecological health of our planet, sustainable design is unquestionably one of the critical issues that challenge building designers. Architects and engineers must meet this challenge, head on, by fully embracing the ethic of sustainable design, to create buildings of beauty, integrity, and ecological soundness.

Building on these goals, the *2003-04 Labs21 Student Design Competition* will be instrumental in providing research and knowledge to guide and stimulate change.

Challenge

The program for a **Chemistry and Biology Laboratory building** for Georgetown College, Georgetown University in Washington, District of Columbia, requires a building of approximately 30,000 gross square feet (gsf). Additional information on Georgetown University and Georgetown College may be found at <http://georgetown.edu> and <http://college.georgetown.edu>, respectively.

In developing a design proposal for the laboratory, competitors are asked to address several critical issues. These include appropriate response to climate and culture, the integration of sustainable practices, and opportunities for the enhancement of the campus and neighborhood setting.

In addition, competitors should address the following Evaluation Criteria in defining the concept and scope of their proposal:

- architectural expression that embraces the ethic of sustainability,
- minimal ecological impact,
- design for human performance,
- design for flexibility and adaptability, and
- exceptional innovation.





Competition Program

Site

The site selected for the competition consists of an L-shaped parcel on the eastern side of the block defined by O, P, 36th, and 37th streets. Located on the western side of the block are Poulton Hall and a row of University-owned townhouses.

Poulton Hall is half a block north from the University's Main Gates on 37th Street. Within Poulton Hall North is the School for Summer and Continuing Education (the School offers degrees and non-degree programs in Washington, DC and abroad), University Information Services, the Operations Center, and the Hoya Kids Learning Center. Poulton Hall South houses Hoya Station (the University's post office), the Mask & Bauble Dramatic Society (the country's oldest continuously running college dramatic society), the Kennedy Institute of Ethics, and the Office of International Programs.

Drawings of the project site (to scale) and photographs of the site and surrounding neighborhood will be posted on ACSA's Web site at <http://www.acsa-arch.org/competitions>. These files will be available for download in .jpg and .pdf format.

Program

The program component areas in net square feet (nsf) for a **Chemistry and Biology Laboratory building** are as follows (students may choose to elaborate their design solution in metric, 1 square meter = 10.76 square feet):

1.0 Public spaces	4200 nsf
2.0 Undergraduate Teaching Laboratories	
3.0 Chemistry Laboratories	3500 nsf
4.0 Biology Laboratories	10500 nsf
5.0 Support areas	1800 nsf
Total area requirements (in net square feet, nsf)	20000 nsf
6.0 Building operational areas	4300 nsf
7.0 Building services and systems	5700 nsf
Total area requirements (in gross square feet, gsf)	30000 gsf





Competition Program

1.0 Public spaces	4200 nsf
<p>The <i>Lobby</i>, <i>Foyer</i>, and <i>Lecture halls</i> should visibly communicate, to the public in general and the University community in particular, the University's continued commitment to sustainability. The design should provide adequate seating areas for the <i>Lobby</i> and <i>Foyer</i>.</p>	
Lobby	1200 nsf
Foyer	300 nsf
<p>The <i>Foyer</i> is a place for meeting and carrying on spontaneous conversations before and after activities held in a <i>Lecture hall</i>.</p>	
Lecture hall	2@1200 nsf 2400 nsf
<p>Each <i>Lecture hall</i> will accommodate 100 people (10 nsf/person) in fixed seats with provisions for the physically-challenged. A standing area or gallery of 150 sq. ft. should be located behind the seating area. It should provide for a <i>Video Projection Booth</i> of 50 nsf. Competitors should consider the alternative of designing one large <i>Lecture hall</i>, able to accommodate 200 people, which may be subdivided into two smaller halls.</p>	
Women's restroom	150 nsf
<p>The <i>Women's restroom</i> should contain toilet compartments, washbasins, and an extended area for make-up.</p>	
Men's restroom	150 nsf
<p>The <i>Men's restroom</i> should contain toilet compartments, wall mounted urinals, and washbasins.</p>	
2.0 Undergraduate Teaching Laboratories	
<p>Each Laboratory should provide bench space for eighteen to twenty-four (18-24) undergraduate students. A typical lab module of 10'-6" x 31'-6" supports four to six (4-6) students. A minimum clear interior vertical dimension of 10'-6" should be maintained throughout the space. Floor to floor vertical dimensions will vary depending on the concept selected for the distribution of services and systems. Laboratory spaces should allow for two means of egress.</p>	
<p>Laboratory spaces should be designed for the maximum number of fume hoods so that in the future the building can be reconfigured (chemistry labs could be retrofitted to biology labs and vice versa) without the need for major renovation, resulting in maximum flexibility and adaptability. In addition, laboratory spaces should be designed for shared use among the disciplines. This shared approach responds to the growing need for cross-disciplinary work among the sciences.</p>	





Competition Program

3.0 Chemistry Laboratories 3500 nsf

In designing *Chemistry Laboratories*, competitors should provide the following: layout and equipment to serve a variety of courses and pedagogical approaches; adequate bench space for equipment and instrumentation (a student workstation is 3-4 feet wide including a file cabinet and data and electrical infrastructure for a computer); one (1) fume hood for every two (2) students; adequate storage space for student experiments; and write-up areas for documenting research experiences.

Organic and inorganic *Chemistry Laboratories* require piped gases, substantial electrical and data infrastructure, and 100% outside air ventilation.

Laboratory	2@1200 nsf	2400 nsf
Laboratory support		300 nsf
The <i>Laboratory support</i> should include prep, storage, equipment, and chemical and glassware supply areas.		
Storage room		300 nsf
Faculty office	2@150 nsf	300 nsf
Teaching assistant office		150 nsf
Student lockers	2@25 nsf	50 nsf

4.0 Biology Laboratories 10500 nsf

In designing *Biology Laboratories*, competitors should provide the following: layout and equipment to serve a variety of courses and pedagogical approaches; two (2) fume hoods per laboratory; space for incubators, refrigerators, and freezers of various sizes (between 10-20 linear feet of wall space per laboratory should be allocated for cabinets and equipment such as refrigerators and incubators); adequate bench and storage space for equipment and student materials; and cabinets for chemical and flammables storage.

Laboratory	6@1200 nsf	7200 nsf
Laboratory support	3@300 nsf	900 nsf
The <i>Laboratory support</i> should include prep, storage, and equipment supply areas.		
Storage room	3@300 nsf	900 nsf
Faculty office	6@150 nsf	900 nsf
Teaching assistant office	3@150 nsf	450 nsf
Student lockers	6@25 nsf	150 nsf





Competition Program

5.0 Support areas	1800 nsf
<p>Seminar/conference room 4@300 nsf 1200 nsf Faculty, students, and staff will use the <i>Seminar/conference room</i> for class, staff, and faculty meetings. Competitors should provide for a 25 sq. ft. locked storage room for equipment, chairs, and supplies.</p> <p>Lounge 2@300 nsf 600 nsf Provide for a 25 nsf food preparation area.</p>	
6.0 Building operational areas	4300 nsf
<p>Circulation 3000 nsf Circulation systems include corridors, passenger elevator(s), freight elevator, mechanical stairs, and fire stairs. The design should provide adequate seating in corridors adjacent to <i>Chemistry</i> and <i>Biology Laboratories</i>.</p> <p>Women's restroom 300 nsf The <i>Women's restroom</i> should contain toilet compartments, washbasins, and an extended area for make-up.</p> <p>Men's restroom 300 nsf The <i>Men's restroom</i> should contain toilet compartments, wall mounted urinals, and washbasins.</p> <p>Security office 150 nsf Building maintenance office 150 nsf</p> <p>Loading dock 200 nsf Shipping/receiving 200 nsf</p>	
7.0 Building services and systems	5700 nsf
<p>"Building services and systems include an electrical equipment room, mechanical equipment room, communications equipment room, and environmental control room.</p> <p>Services must be uniformly and repetitively distributed to each laboratory and designed to provide simple extension into the laboratory without disruption to adjacent modules. Services may run overhead, in a service corridor, or in interstitial space to permit changes without requiring an upgrade to the building infrastructure, capacity, or major distribution systems. All building system components that require routine maintenance and repair shall be accessible without interrupting the day-to-day operations of the laboratory.</p> <p>Utilities and services shall be organized into specific zones, both horizontally and vertically, to provide uniform distribution of systems and services to each lab module. This three-dimensional planning allows for ease of maintenance and access of services and provides for maximum operational flexibility."*</p> <p>*from the National Institutes of Health Research Laboratory Design Policy and Guidelines <http://des.od.nih.gov/eWeb/planning/html/labtoc.htm></p>	





Resources

Publications and Web Sites

The following resources provide specific information on laboratory design. Some of these are focused specifically on sustainability in laboratory facilities, and faculty sponsors are strongly encouraged to use these resources. They are essential for understanding the nature, scope, and objectives of the competition program.

- A Design Guide for Energy-Efficient Research Laboratories <<http://labs21.lbl.gov/dg.html>>
- American Institute of Architects, Center for Advanced Technology Design. *Guidelines for Planning and Design of Biomedical Research Laboratory Facilities*. (Washington, DC: American Institute of Architects, 1999)
- Braybrook, Susan. *Design for Research: Principles of Laboratory Design*. (New York: John Wiley & Sons, 1993)
- Cooper, Crawley. *Laboratory Design Handbook*. Boston: CRC Press, 1994.
- Griffin, Brian. *Laboratory Design Guide: for Clients, Architects and their Design Team: the Laboratory Design Process from Start to Finish*. (London: Butterworth Heinemann, 2000)
- Introduction to Low-Energy High Performance Laboratory Design <<http://labs21.lbl.gov/LED.html>>
- Labs21 Case Studies <<http://labs21.lbl.gov/cs.html>>
- Labs21 Environmental Performance Criteria <<http://labs21.lbl.gov/epc.html>>
- McIntosh, I., PhD, et al. *ASHRAE Laboratory Design Guide, RP-969*. (Atlanta, GA: American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.)
- National Science Foundation. *Planning Academic Research Facilities: A Guidebook*. (Washington, DC: National Science Foundation, 1992)
- R&D Magazine Lab Design Handbook <<http://rdmag.com/scripts/labhandbook1.asp>>
- Ruys, Theodora. *Laboratory Facilities, Vol. 1 of Handbook of Facilities Planning*. (New York: Van Nostrand Reinhold, 1990)
- Watch, Daniel. *Building Type Basics for Research Laboratories*. (New York: John Wiley & Sons, 2000)
- Whole Building Design Guide <<http://wbdg.org>>

The following resources provide further information on sustainable design practices in general i.e. practices that are applicable to a wide range of buildings, including laboratories. Students should refer to their own school libraries for many other sources of information on sustainable design issues.

- Center for Renewable Energy and Sustainable Technology <<http://crest.org>>
- U.S. Department of Energy, Center for Sustainable Development <<http://www.sustainable.doe.gov>>
- U.S. Department of Energy, Energy Efficiency and Renewable Energy <<http://www.eere.energy.gov>>
- U.S. Green Building Council <<http://usgbc.org>>
- Powell, Kenneth. Richard Rogers, *Richard Rogers Partnership, Complete Works, Volume Two*. (London: Phaidon Press, 2001), "Towards a Sustainable Architecture: Environmental Research and Development," p.236-299
- Steele, James. *Sustainable Architecture – Principles, Paradigms and Case Studies*. (New York: McGraw-Hill, 1997)
- Ten Shades of Green <<http://archleague.org/tenshadesofgreen/index.html>>
- Van der Ryn, Sim, and Stuart Cowan. *Ecological Design*. (Washington: Island Press, 1996)





Resources

Case Studies

In addition to the publications and Web sites listed above competitors are strongly encouraged to research, document, and analyze the projects listed below. This list is provided to encourage and promote the research and analysis of significant works of architecture relevant to the competition program and the integration of sustainable practices. An intention in all ACSA administered student design competitions is to make competitors aware that background research is a fundamental component of all design problems.

Center for Clinical Sciences Research, Stanford University, Palo Alto, California.

Foster & Partners, London, England

- *Foster Catalog 2001*. Munich: Prestel, 2001
- *Architectural Record*, 2001 June, v.189, n.6, p.130-137
- *GA Document*, 2001 Jan., n.64, p.66-73
- *Lotus International*, n.112, p.38-41
- *World Architecture*, 2001 Nov.-Dec., n.101, p.24-29

Faculty of Economics and Management, Utrecht University, Utrecht, the Netherlands.

Mecanoo Architecten, Delft, the Netherlands

- Houben, Francine. *Mecanoo Architects - Contrast, Composition, Complexity*. Boston: Birkhäuser, 2001
- *Architectural Review*, 1996 June, v.199, n.1192, p.63-67
- *A+U: Architecture and Urbanism*, 1996 Sept., n.9 (312), p.20-35
- *Architektur, Innenarchitektur, Technischer Ausbau*, 1996 May, v.104, n.5, p.41-45

Fortbildungsakademie Mont-Cenis, Herne-Sodingen (Ruhr), Germany

Jourda & Perraudin Architectes, Paris, France

- *Abitare*, 2000 Feb., n.392, p.96-101
- *Architectural Record*, 1999 Dec., v.187, n.12, p.199-204, 206, 208
- *Architectural Review*, 1999 Oct., v.206, n.1232, p.51-55
- *Detail*, 1999 Apr.-May, v.39, n.3, p.386-389
- *Techniques & Architecture*, 1999 June, n.443, p.98-107

Fred Hutchinson Cancer Research Center, Seattle, Washington

Zimmer, Gunsul, Frasca Partnership, Seattle, Washington

- *Architecture*, 1994 Mar., v.83, n.3, p.68-75
- <<http://labs21.lbl.gov/docs/HUTCH30890.pdf>>

Georgia Public Health Laboratory, Decatur, Georgia

Lord, Aeck and Sargent Architects, Atlanta, Georgia

- *Architectural Record*, 1999 June, v.187, n.6, p.166-169
- <<http://labs21.lbl.gov/docs/gphl.pdf>>

Institute for Forestry and Nature Research (IBN-DLO), Wageningen, the Netherlands

Behnisch, Behnisch & Partner, Stuttgart, Germany

- Blundell Jones, Peter. *Günter Behnisch*. Boston: Birkhäuser, 2000
- *Architectural Record*, 2000 Jan., v.188, n.1, p.96-103
- *ARQ: Architectural Research Quarterly*, 2001, v.5, n.1, p.90-91
- *Architectural Review*, 2001 Jan., v.209, n.1247, p.28-33
- *Landscape Architecture*, 2000 Nov., v.90, n.11, p.68-73, 91-92





Resources

Louis Stokes Laboratories-Building 50, National Institutes of Health, Bethesda, Maryland
Hansen, Lind and Meyer, Bethesda, Maryland
- <<http://labs21.lbl.gov/docs/NIH5030943.pdf>>

Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany
Heikkinen & Komonen, Helsinki, Finland
- Braun, Hardo ...[et al.]. *Buildings for Science: Architecture of the Max Planck Institutes*. Boston: Birkhäuser, 2001
- *Architectural Record*, 2003 Jan., v.191, n.1, p.110-117
- *Architectural Review*, 2002 Aug., v.212, n.1266, p.52-55
- *Architettura*, 1999 July-Aug., v.45, n.525-526, p.428-452
- *Arkkitehti*, 2002, v.99, n.2, p.32-41

Minnaert Building, De-Uithof Campus, Utrecht University, Utrecht, the Netherlands
Neutelings Riedijk Architecten, Rotterdam, the Netherlands
- Zeegers, P. J. Th., and Willem Jan Neutelings. *Minnaert Building Utrecht University, Neutelings Riedijk Architects*. Rotterdam: 010 Publishers, 1998
- *Archis*, 1998 Apr., n.4, p.40-51
- *Architectural Review*, 1999 Mar., v.205, n.1225, p.58-61
- *A+U: Architecture and Urbanism*, 1998 Sept., n.9 (336), p.108-125
- *Domus*, 1998 June, n.805, p.10-17
- *el Croquis*, 1999, n.94, p.112-135
- *Techniques & Architecture*, 1999 Aug.-Sept., n.444, p.84-89

Pharmacia Building Q, Skokie, Illinois
Flad & Associates, Madison, Wisconsin
- <<http://labs21.lbl.gov/docs/pharmacia.pdf>>

Science and Technology Center, Rider University, Lawrenceville, New Jersey
Kieran Timberlake Associates, Philadelphia, Pennsylvania
- Kieran, Stephen, and James Timberlake. *Manual: The Architecture of Kieran Timberlake*. New York: Princeton Architectural Press, 2002
- *ARQ: Architectural Research Quarterly*, 2001, v.5, n.2, p.126-150
- *Progressive Architecture*, 1994 Mar., v.75, n.3, p.64-69

UNESCO Laboratory and Workshop, Vesima (Genova), Italy
Renzo Piano Building Workshop, Genova, Italy
- Buchanan, Peter. *Renzo Piano Building Workshop: Complete Works, Vol. 2*. London: Phaidon Press, 1995
- Pizzi, Emilio. *Renzo Piano*. Boston: Birkhäuser, 2002
- *Architectural Review*, 1995 Sep., v.198, n.1183, p.76-80
- *Abitare*, 1993 Apr., 317, p.156-169





Competition Guidelines

Schedule

April 2003	Competition documents available for download at http://www.acsa-arch.org/competitions
February 9, 2004	Deadline for receipt of Registration Forms at ACSA (there is no registration fee)
May 17, 2004	Deadline for receipt of submissions at ACSA (there is no submission fee)
May 31, 2004	Prize winners selected by the competition jury
Summer 2004	Publication of competition summary catalog
October 2004	Prize winners invited to present their designs at the 2004 Labs21 Annual Conference

Awards

The competition jury will convene in May 2004 to select prize-winning projects and honorable mentions. Winners and their faculty sponsors will be notified of the competition results directly. A list of winning projects and honorable mentions will be posted on ACSA's Web site at <http://www.acsa-arch.org/competitions> and Labs21's Web site at <http://epa.gov/labs21century>.

The competition sponsors will announce their full plans for the awards in the fall of 2003.

Winners will be recognized by Labs21 and will be invited to present their projects at the 2004 Annual Labs21 Conference, an international forum that brings together the world's leading laboratory designers, engineers, and management personnel.

Prize-winning submissions will also be exhibited at the 2005 ACSA Annual Meeting and the 2005 American Institute of Architects' National Convention, as well as published in the competition summary catalog.

Eligibility

The competition is open to students of architecture in B.A./B.S. in Architecture (upper-level third year studio or above), Bachelor of Architecture (upper-level third year studio or above), and Master of Architecture programs in the United States and Canada. All competitors are required to work under the direction of a faculty sponsor. Submissions should be principally the product of work in a design studio course. All schools and students wishing to participate must submit registration forms.

Language

The official language of the competition is English.

Registration

Faculty who wish to enroll all or some of their studio classes must complete a copy of the Registration Form and return it to ACSA by February 9, 2004. Only one form per faculty sponsor should be used to register all students, with each student competitor listed individually by name. Students or teams wishing to enter the competition on their own must have a faculty sponsor who should complete and return the Registration Form. **There is no registration or submission fee to participate in the competition.**





Competition Guidelines

Please note that due to the number of submissions ACSA is not able to otherwise acknowledge receipt of registration forms. Please keep a copy of your Registration Form for your records.

Faculty Responsibility

The administration of the competition at each school is left at the discretion of the faculty sponsor within the guidelines set forth in this document. Work on the competition may be structured over the course of one or two semesters (Summer 2003, Fall 2003 and/or Spring 2004).

Evaluation Criteria

Faculty sponsors are expected to develop a system to evaluate the work of their students using the criteria set forth in this document. The evaluation should be an integral part of the design process, encouraging students to scrutinize their work in a manner similar to that of the jury. The final result of the design process will be a submission of up to four (4) presentation boards describing the design solution (see Presentation Format and Required Drawings sections of this document). In addressing the specific issues of the Competition Program, submissions must clearly demonstrate the design solution's response to the following Evaluation Criteria:

- **Architectural expression that embraces the ethic of sustainability**

The design solution should demonstrate sustainable design as an integral and synergistic element of an architecture that is aesthetically delightful and contextually sensitive to people, place, and time. The building itself should become a learning tool that invites and engages the campus community to see and experience sustainable design and, thereby, increase awareness of the ecological impact of buildings.

- **Minimal ecological impact**

The design solution should achieve energy and environmental performance goals that significantly reduce energy use and environmental impact compared to standard practice. Toward this end, the project should adopt a *whole-building design process* (see definition below) that appropriately integrates building systems for performance. The project should consider life-cycle costs and benefits in adopting green-design strategies pertaining to energy use, water conservation, and materials.

A *whole-building design process* refers to the process where designers with various expertise collaborate to achieve a common objective. The fundamental challenge of 'whole buildings' design is to understand that all building systems are interdependent and the result of each set of decisions has a cascading impact on other design decisions. For example, the design of a daylighting system is the result of an architect designing a window system, working with an engineer designing a lighting and lighting control system and an interior designer selecting wall color and interior furnishings. The result of this collaborative decision process is then used by the mechanical engineer when sizing the heating and cooling system and specifying duct sizes. The goal of the process is to lead to a building design where the building works as one integrated system.

- **Design for human performance**

The design solution should support and enhance the learning process through spatial configurations that foster interaction between students and their faculty, and through spaces that achieve high levels of indoor environmental quality pertaining to ergonomics, thermal comfort, visual quality, acoustic performance, and indoor air quality.





Competition Guidelines

- **Design for flexibility and adaptability**

The design solution should allow for changes in programmatic needs and associated laboratory configurations, by using modular design and flexible distribution systems.

- **Exceptional innovation**

Special credit will be given to competitors that incorporate particularly innovative ideas in their design solutions – ideas that achieve results beyond the expectations of the sponsors.

Presentation Format

Drawings must be firmly mounted or drawn directly on no more than four (4) 20" x 20" (50 cm x 50 cm) illustration, foam core, or other stiff lightweight mounting material. Any other type of presentation (unmounted, three-dimensional, or mounted on wood, metal, or glass) will be disqualified.

The names of student competitors, their schools, or faculty sponsors, must not appear on the front or back of any board. An unsealed envelope holding a copy of the completed Submission Form and Design Essay must be affixed to the back of each board. Identification should not appear on the Design Essay. All boards should be numbered on the back in the order in which they should be viewed (i.e., 1 of 4, 2 of 4, etc.).

Competitors should keep in mind that, due to the large number of entries, preliminary review does not allow for the hanging or end-to-end display of presentation boards. Accordingly, competitors should not use text or graphics that cross over from board to board.

All presentations must be suitable for black and white reproduction. Students may use color if desired, but must ensure that distinct colors will read as distinguishable tones when photographed in black and white. Entries may be either originals or high-quality reproductions. Competitors should make adequate photographic and/or digital (300 dpi) reproductions of their work prior to submission. Winning entries will be required to submit photographic and/or digital (300 dpi) reproductions for use in the competition summary catalog and exhibit material. **Please note that submission boards cannot be returned under any circumstances.**

Required Drawings

It is required that each submission directly address the specific criteria outlined in the Competition Program and Evaluation Criteria set forth in this document. Incomplete or undocumented entries are subject to disqualification. All drawings should be drawn at a scale appropriate to the design solution and include a graphic scale and north arrow.

Presentations should include the following required drawings:

- A ground floor and/or site plan showing the relationship of the laboratory building to the surrounding neighborhood, landscaping, and pedestrian and vehicular circulation patterns.
- Additional floor plans as applicable.
- Elevations and/or sections sufficient to show the building's relationship to the site and the integration of building services and systems.
- At least one three-dimensional representation in the form of either an exploded axonometric, section perspective, or model photograph that clearly illustrates the design solution's intention.
- At least one detailed section drawing or three-dimensional model (either photograph(s) of a physical model or computer-generated images) illustrating the integration of sustainable practices.





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- Systems Integration Diagrams that describe and highlight how building systems work to achieve sustainability objectives (e.g., a diagram indicating energy flows through the building including, but not limited to, the envelope and HVAC systems, highlighting energy efficiency features).

All program components should be clearly labeled in all drawings. Competitors are encouraged to include any other drawings, photographs, and/or diagrams that will help to communicate the nature of their design solution.

Design Essay

A brief two-page essay in English (500 words maximum), describing the most important concepts of the project, should be included as part of the information submitted in the presentation boards. Keep in mind that the presentation boards should graphically convey the design solution as much as possible, and therefore should not rely on the Design Essay for general understanding.

In developing the Design Essay competitors should use the EPC 2.0 Project Checklist as a guide. The checklist is available for download at <http://labs21.lbl.gov/epc.html>.

Submission Form

A completed Submission Form must accompany each entry. A copy of the completed form must be enclosed in an unsealed envelope firmly attached to the back of each board. A copy of the Design Essay must also be included with the Submission Form.

Shipping Instructions

Submissions should be shipped in cardboard boxes or sturdy wrapping. Wood crates and other excessive packaging materials (tape, wrapping paper, bubble wrap or packing "peanuts") are not permitted. Do not tape tracing paper or any other type of protective material to individual boards. These requirements are designed specifically to reduce waste and must be adhered to strictly.

All submissions must be received at ACSA by 5:00 PM EDT, May 17, 2004. Please note that due to the number of entries ACSA is not able to otherwise acknowledge receipt of submissions. ACSA cannot be responsible for customs processing or related fees. C.O.D. shipments cannot be accepted.

Ship submissions to:

Association of Collegiate Schools of Architecture

Attn: Labs for the 21st Century Student Design Competition
1735 New York Avenue NW
Washington, DC 20006

Important Notes

Submissions cannot and will not be returned under any circumstances. Upon receipt submissions become the property of ACSA. Competitors submitting original material for the competition should make adequate photographic and/or digital (300 dpi) reproductions of their work prior to submission.





Competition Guidelines

ACSA, the AIA, EPA, DOE, and all sponsoring organizations reserve the right to publish drawings, written descriptions, photographs, and the names of competitors without compensation.

For Additional Information

Competition updates, including information on jury members as they are confirmed, will be posted on ACSA's Web site at <<http://www.acsa-arch.org/competitions>>.

All questions regarding the competition should be addressed to:

Association of Collegiate Schools of Architecture

1735 New York Avenue NW

Washington, DC 20006

Tel: 202/785-2324 x2

Fax: 202/628-0448

Email: competitions@acsa-arch.org





Labs21 Registration Form

Mail or Fax to ACSA by February 9, 2004

Faculty who wish to enroll all or some of their studio classes must complete a copy of the Registration Form and return it to ACSA by February 9, 2004. Only one form per faculty sponsor should be used to register all students, with each student competitor listed individually by name. Please note that due to the number of submissions ACSA is not able to otherwise acknowledge receipt of registration forms. Please keep a copy of your Registration Form for your records. Do NOT submit multiple copies of the Registration Form. Please complete this form in its entirety.

Faculty Sponsor Information

School/University:

Name of Faculty Sponsor(s):

Faculty Sponsor's complete mailing address:

Faculty Sponsor's telephone number(s):

Faculty Sponsor's fax number(s):

Faculty Sponsor's email address:

Project Information

Number of participating students:

Names of ALL participating students and their major field of study:

Faculty Sponsor's signature/date:

Send all Registration Forms to: ACSA, 1735 New York Avenue NW, Washington, DC 20006.
Fax 202 628-0448.





Labs21 Submission Form

Mail to ACSA with entries to be received by May 17, 2004

Complete this form and place it in an unsealed envelope attached to the back of each board (photocopies are acceptable). Include a copy of the Design Essay as described in the Competition Guidelines. All submissions must be received at ACSA by 5:00 PM EDT, May 17, 2004. Please note that due to the number of entries ACSA is not able to otherwise acknowledge receipt of submissions. Submissions cannot and will not be returned under any circumstances. Upon receipt submissions become the property of ACSA. Competitors submitting original material for the competition should make adequate photographic and/or digital (300 dpi) reproductions of their work prior to submission. Please write the contact information for all students on the back of this form or on an additional sheet.

Name of Student(s):

School/University:

Mailing address(es) of all participating students (good through the fall of 2004):

Telephone number(s):

Email(s):

Name of Faculty Sponsor(s):

Faculty Sponsor's telephone number(s):

Faculty Sponsor's email address:

Number of weeks worked on the project:

If any significant modifications to the given design challenge were made, please describe them and explain the rationale for the modifications on a separate piece of paper.

