

Universal Design & Housing



What is universal design?

Universal design is a framework for solving design problems so that the results work well for the widest possible spectrum of users without separate or special design. It applies to the design of places, things and information. Sometimes called design-for-all, lifespan design or inclusive design, it is a worldwide movement. Universal design responds to the fact that humans are more diverse in ability and age today than at any other time in human history. It goes beyond 'accessibility' for a limited number of disabling conditions, emphasizes flexible solutions and promotes the integration of features that enhance the experience of all users. Universal design promotes best practice rather than minimum standards.



Institute for Human Centered Design
[Adaptive Environments]



Movable under counter cart with butcher block surface and pull out draws for easy access.



Pull down shelving makes reaching upper shelves easier.

Principles of Universal Design*

Equitable Use: The design does not disadvantage or stigmatize any group of users.

Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.

Simple, Intuitive Use: Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

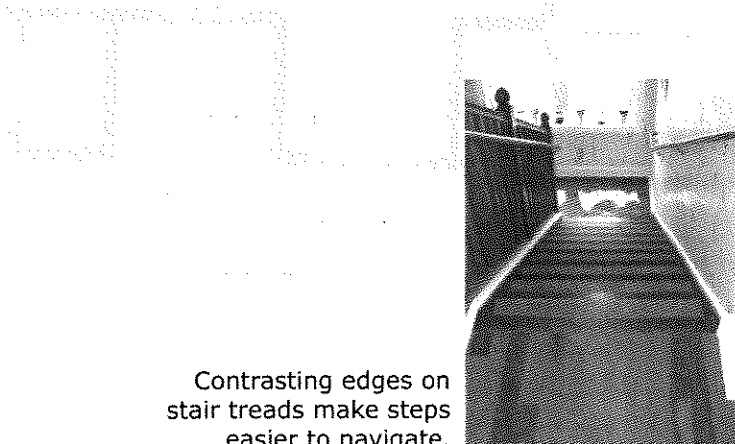
Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Low Physical Effort: The design can be used efficiently and comfortably, and with a minimum of fatigue.

Size and Space for Approach & Use: Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility.

**The principles were developed by a group of American advocates in 1997 and are copyrighted to the Center for Universal Design, School of Design, North Carolina State University at Raleigh. They are now in common use in a variety of nations.*



Contrasting edges on stair treads make steps easier to navigate.

) How does universal design differ from other types of accessible design?

Accessible design focuses on ensuring that design does not limit use by people with some kinds of disabilities, most often mobility limitations. In the US and in an increasing number of other nations, accessibility in the built environment is viewed through regulation and code. These codes and standards vary in terms of required specifications. The most common accessibility requirements for housing are the Fair Housing Act, Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. There are also state building codes, such as the Massachusetts Architectural Access Board standards, that stipulate accessibility standards.

The variety of requirements is often dauntingly confusing but they are limited in scope: some only apply to a small percentage of housing units and all mandate a modest level of accessibility focused on a small number of disabilities. Universal design in housing presumes a wide diversity of users and the power of design to enhance comfort and independence for all.

) What about 'Visitability'?

Visitability is a simple idea born of the frustration of having only a small number of housing units made accessible, excluding people who need those accessibility features from the ordinary opportunity to visit friends and family. The movement proposes making a few changes standard for all housing: 32" wide doorways, at least one level entrance and access to a first floor restroom. Visitability shares with universal design a conviction that variation in ability is ordinary and that features that work for people with disabilities offer advantages for everyone.

For more information on Visitability:
www.concretechange.org/

) What type of housing would incorporate universal design?

Universal design can be used for single family homes, multi-unit apartment buildings, public housing, residential programs, and assisted living facilities -- any kind of housing. Universal design has been used in expensive architect-designed housing to renovations and additions to Habitat for Humanity homes.

Integrating universal design features makes sense in developments that have committed to green or sustainable design in which issues of indoor air quality and maximizing access to natural light are already priorities as well as in housing intended for a high proportion of older residents and/or people with disabilities.

) How does universal design benefit persons with cognitive, neurological or developmental disabilities?

Many building professionals use designs that may be unclear or confusing. For example, the housing may have thermostats that are difficult to read or are very complicated to understand. A universally designed thermostat uses easy-to-read icons as well as numbers in a larger font with contrasting color to show the range from cold to warm. Contrasting colors and texture can orient users simply and unconsciously.

Appliances with automatic shut-offs, easily manipulated controls on appliances, lighting that has automatic controls, and open or windowed cabinets are all examples of good choices that are universally beneficial. Many choices of materials and features can seamlessly support "aging in place" well in advance of actual needs and avoiding the trauma associated with transitioning or relocating.

) Does universal design apply to home modifications and renovations?

Yes! Only a small percentage of housing is newly constructed. Universal design is a useful framework for making choices about renovation that integrates features that improve usability and safety but that don't look 'special' and don't reduce the value of the home.

) Are there small changes or upgrades that can be made using universal design?

Small changes such as switching to lever door handles, applying non-slip rubber strips in the bathtub, adding flexible, high-intensity but low-volt lighting, changing faucets to paddle handles, adding a shelf outside the front door, are all universal design features that can enhance one's living space.

Some examples of large and small universal design details for new and renovated homes:

Exterior:

- Front door with a single, long glass panel or sidelight to brighten interiors and make it easy to see who is at the door. Textured glass or a pleated shade can provide privacy.
- A reflective circle feature around the keyhole.
- The lighted doorbell has both ringer and a small light that blinks on an interior room wall visible from several high use areas.
- A row of simple, stick-on appliques to glass sliding doors at 36" and 60" to prevent adults and children from walking into the glass.
- A shelf near the entry door to place bags etc. while opening the door.
- Low solar garden lights along the driveway to make it easier to position cars into a garage.
- Large, high contrast numbers mounted on the house for visitors and emergency personnel.

Kitchen:

- Cabinets fitted with full pullout trays and corner cabinets with lazy susans.

- Adjustable intensity under-cabinet lighting.
- Trash compactor that opens with a foot or hand pull and dramatically reduces weekly waste.
- Shallow and wide side-by-side refrigerator with a lazy susan on the lower shelf to make seeing food easier.
- Dishwashers installed 8-12" higher to make loading and unloading easier and offer an optional work area or space for a microwave.
- Double sink with a high and low side and a spray faucet easily operable with a closed fist.
- Folding doors and removable floor under the sink to permit either a stool or a wheelchair to pull up to the sink (used for storage unless needed as knee space).

Bathroom:

- Walls reinforced during construction to allow grab bars to be installed easily if necessary.
- Contrasting strip of tile or edging to contrast the floor from the walls and distinguish edges of counters.
- Like the kitchen, choose under-sink cabinet with bi-fold doors and removable cabinet floor to permit use with a stool or wheelchair at the sink.
- Electric exhaust vents to minimize water and mold problems.
- Non-skid flooring.

Floors:

- Carpets resistant to static, flame, mildew, abrasion, permanent staining, and fading. Opt for low pile (1/2") single loop installed without padding. Choose one with a biological guard to prevent bacterial growth.
- Use hard surface, non-glare, easy clean flooring as much as possible.

General:

- Paint chosen for minimal off-gassing and washability.
- Electrical outlets mounted at 18" from the floor.
- Larger doors throughout with 32" clear opening.
- Front-loading laundry appliances installed on raised floor.
- Light switches with rocker switches and all lights even lamps - switched.
- Adjustable task lighting.

To Learn More About Universal Design:



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www.HumanCenteredDesign.org
Specialized library open to the public.

American Association of Retired Persons (AARP)
www.aarp.org/universalhome/

American Society of Interior Designs (ASID)
www.asid.org/designknowledge/aa/universal/

Canadian Mortgage & Housing Corporation
www.cmhc.ca/en/search/search_001.cfm

Center for Inclusive Design & Environmental Access State University of New York at Buffalo
www.ap.buffalo.edu/idea/

The Center for Universal Design
North Carolina State University
www.design.ncsu.edu/cud/

Iowa State University
www.extension.iastate.edu/Pages/housing/Uni-design.html

Kansas State University
www.oznet.ksu.edu/library/HOUS2/mf2213.pdf

Universal Designers and Consultants
www.UniversalDesign.com

Recommended books on residential universal design:

High Access Home: Design and Decoration for Barrier-Free Living by Charles A. Riley \$14.98 Rizzoli Press, Jan 1999

Prescriptions for a Healthy House, 3rd Edition: A Practical Guide for Architects, Builders & Homeowners
by Paula Baker-Laporte, Erica Elliott, John Banta \$28.95
House & Home - New Society Publishers, May 2008

Products and Plans for Universal Home by Home Planners
\$15.95 Home Planners, LLC, January 2000

Universal Design for the Home: Great Looking, Great Living Design for All Ages, Abilities, and Circumstances
by Wendy A. Jordan \$24.99 Quarry Books, 2008

Gracious Spaces, Universal Design in the Home by Mary Jo Peterson \$39.99 (Kindle Book Download) McGraw Hill, 1999

Universal Kitchen & Bathroom Planning: Design that Adapts to People by Mary Jo Peterson (used copies available)
McGraw Hill, 1998