

# Louisiana Collegiate Design Competition (LCDC) 2019 Competition Packet



# Louisiana Collegiate Design Competition

**Date: February 22<sup>nd</sup>-23<sup>rd</sup>**

**Location: Patrick F. Taylor Hall, LSU Campus**

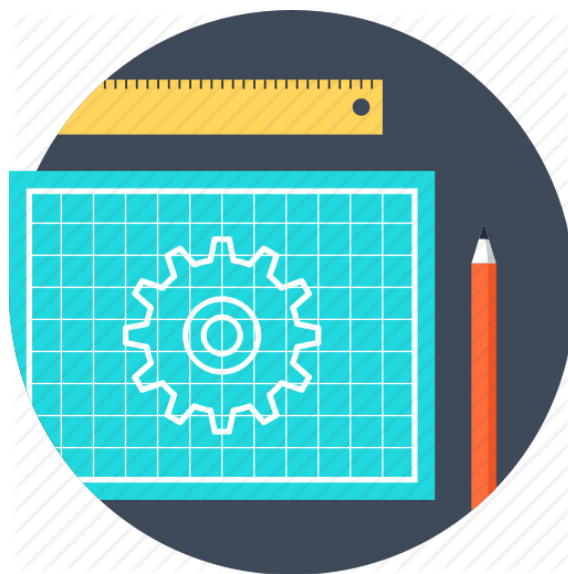
Dear participants,

Welcome to the first annual Louisiana Collegiate Design Competition (LCDC) hosted by the Society of Peer Mentors from the LSU College of Engineering! Taking place at the end of National Engineers Week, LCDC is a student-driven, student organized engineering competition focused on developing skills in leadership, teamwork, networking and applying engineering knowledge for its participants. The mission of LCDC is to spread the aspects of engineering, celebrate how engineering makes a difference in the community, and increase public dialogue about the need for engineers. Our team has come a long way in planning the success of this event, and we greatly appreciate your participation.

If you have any questions or concerns, please feel free to contact any LCDC chairs or SPM members for help.

Thank you,

LCDC Chairs  
Society of Peer Mentors  
Louisiana State University  
lcdc.lsu@gmail.com



## LCDC Schedule

Session Time	Session		Location
<b>Day 1   Friday, February 22<sup>nd</sup></b>			
4:30 pm – 5:00 pm	Check-In		PFT 1263 (front)
5:00 pm – 6:00 pm	Welcome/Icebreakers		PFT 1263/Cambre Atrium
6:00 pm – 7:00 pm	Dinner		The Cambre Atrium
6:00 pm	Competition Packet Distribution		The Cambre Atrium
<b>Day 2   Saturday, February 23<sup>rd</sup></b>			
7:00 am – 7:30 am	Check-In/Breakfast		The Cambre Atrium (in front of PFT 1206)
7:30 am – 8:00 am	Rule Reading/Q&A		PFT 1263
8:00 am – 12:00 pm	Design/Build Time		See Room Assignments (pg. 11)
12:00 pm	Lunch*		The Commons
12:00 pm – 3:00 pm	Design/Build Time		See Room Assignments (pg. 11)
3:00 pm – 3:30 pm	Break/Setup		
3:30 pm – 5:00 pm	Competition		The Cambre Atrium
5:00 pm – 5:30 pm	Break/Setup		
5:30 pm – 6:30 pm	<b>Industry Networking~</b>		Capstone Gallery
6:30 pm – 8:00 pm	<b>Dinner/Keynote Speaker/Awards~</b>		The Commons

\* Lunch will be available in the Commons for teams to pick up at 12:00 pm.

~ **Business Professional Attire Required**

**PFT 1259** will be the location of the competition store

See map for room locations.

# Patrick F. Taylor Hall



## Design Competition

### Problem Statement:

Developing a reliable way to efficiently transport materials or products from one area to another is a crucial step in many industrial processes (Figure 1). In many cases, if the device for transporting objects fails, a **bottleneck** can occur, slowing down production for the entire company and resulting in massive losses. Your task is to **design** and **prototype** a solution for effectively transporting **5 differently shaped objects** to a **designated target area** within a **given time limit**.



**Figure 1:** Siemens belt conveyor used for transporting bulk materials at plant site

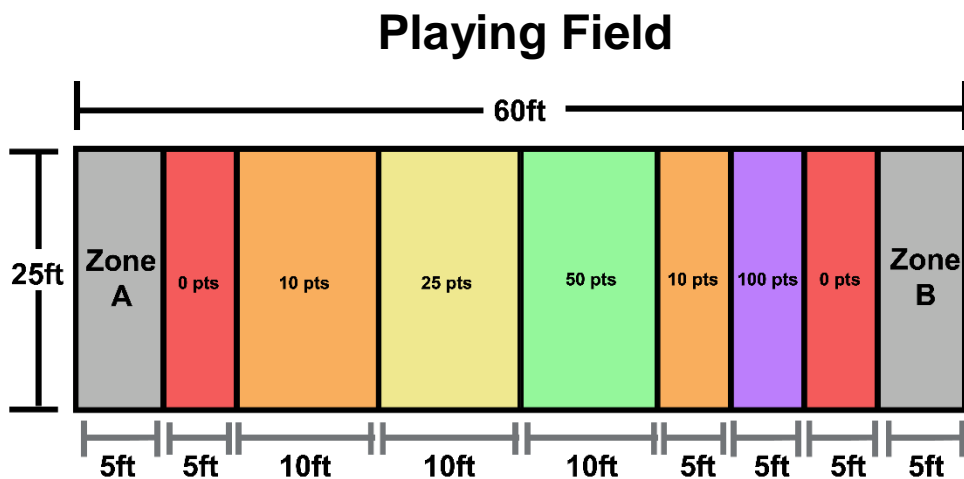
### Overview:

1. Teams of 4-6 participants are to design and build device(s) that can move the provided objects to score the most amount of points.
2. Points will be determined by:
  - a. The zone that the objects rest in at the **end** of the allotted time.
  - b. Cost Efficiency
  - c. Industry Judges Input
3. Team are given a **\$50 budget** to purchase materials.
4. Materials used can **only** be purchased from the **Tiger Store (PFT 1259)**. Any materials outside the store will not be allowed. **\*SEE EXCEPTIONS**

## Competition Rules:

### 1. Setup

- a. Teams will have **one minute** to set up their device(s) in **Zone A** and **Zone B**. (See Playing Field Below)
  - i. Device(s) must not come in contact with the ground outside the zones **during set-up time**.
- b. Device(s) must be free standing by the end of setup and throughout the round.



### 2. Competition Time

- a. Teams will be given **two minutes** to move the given objects.
  - i. Objects: 2 hacky sacks (Figure 2a), 2 miniature soccer balls (Figure 2b), and 1 deflated volleyball (Figure 2c)



(a)



(b)



(c)

**Figure 2:** Objects that must be transported



- b. Teams will be able to load objects on to their device(s) and reset the device(s).
  - i. Once the device(s) are set, teams must utilize a **trigger** or **switch** to activate the device(s).
  - ii. Objects are allowed to be retrieved, but they must be returned all the way back to Zone A before further attempts. **\*SEE EXCEPTIONS**
- c. Team members **MUST REMAIN IN ZONE A** during competition time. Said team is **not** allowed to leave Zone A until time is expired, unless retrieving object(s)/device(s) **(see Penalties)**.

### 3. \*Exceptions

- a. Materials not found in Tiger Store may be requested to the store managers in person, GroupMe, or via email (lcdc.lsu@gmail.com). If approved, the material will be added to the Tiger Store.
- b. When retrieving the objects, no trigger/switch on device is necessary.

### 4. Penalties

- a. Five points will be deducted for every five seconds past allotted set-up time.
- b. Fifty points will be deducted if a player chooses to leave Zone A to retrieve objects/device(s) manually.

### 5. Device Restrictions

- a. Devices using water **must not spill any water**.
- b. Devices must be portable (From Room Assignments to the Cambre Atrium).
- c. No chemical reactions allowed. PLEASE DO NOT BLOW UP THE BUILDING.
- d. Do not break glass or fragile items.
- e. Do not set anything on fire.
- f. Do not use the building, stair well rails, etc. for mechanical advantage when building device.
- g. No outside tools allowed, **BARRETT**.
- h. No outside fasteners allowed, **BARRETT**.

### 6. Testing

- a. Testing will be allowed on the Competition Field at 1pm on a first-come, first-serve basis in the Cambre Atrium.

## Scoring Sheet

Team Number: \_\_\_\_\_

Grand Total \_\_\_\_\_

### Competition

Category	Points Earned
Hacky Sack 1	
Hacky Sack 2	
Miniature Soccer Ball 1	
Miniature Soccer Ball 2	
Deflated Volleyball	
Money ( $\$Left * 2$ )	
Industry Judge Input	
<b>Total</b>	

### Penalties

Category	Points Deducted
Set up time (-5 every 5 seconds)	
Leaving Zone A	
<b>Total</b>	

\*Points for objects on Zone lines will be awarded based on where the majority of the object lies.

\*Objects that are on border (i.e. out-of-bounds) lines will be considered within bounds.



## Store Contents

Below is a list of the materials available for purchase in the Tiger Store. The Materials Order Form is attached at the end of this packet.

Hot glue gun stations will be provided around Patrick F. Taylor Hall. Measuring tapes and a PVC cutter will be available at the Tiger Store for rent.

To ensure that everyone gets materials, please only order up to the Max Units listed below during the Initial Ordering. After everyone has materials, two people per team can go to the Tiger Store (PFT 1259) and buy more materials if needed. After the Initial Ordering, materials will be sold based on availability.

Material	Price per Unit	Max Units (Initial Ordering)
16oz Mason Jars	\$2.00	1
Aluminum Wire Rod Armature - 1/8"	\$3.00 (per foot)	2
Balsa Wood	\$8.00	1
Bendy Straws	\$0.10	10
Binder Clips	\$0.50	10
Blank CDS	\$0.75	4
Bucket Lids	\$2.00	1
Bungee Cords (Mini and Loop)	\$2.00	4
Bungee Cords (Red and Blue)	\$2.00	4
Bungee Cords (Yellow and Green)	\$3.00	4
Cardboard	\$0.25 - \$1.00	2
Clothes Pins	\$0.25	4
Dowel Sticks	\$0.40	4
Duct Tape	\$5.00	1
Fishing Line	\$0.25 (per yard)	10
Hot Glue Sticks	\$0.50	2
Large Construction Paper	\$1.00	1

<b>Magnets</b>	\$1.00	2
<b>Paper Plates</b>	\$0.25	10
<b>Ping Pong Balls</b>	\$0.05	10
<b>Pipe Cleaners</b>	\$0.10	10
<b>Plastic Cups</b>	\$0.25	4
<b>Popsicle Sticks</b>	\$0.15	5
<b>Poster Board</b>	\$1.00	1
<b>Push Pins</b>	\$0.05	10
<b>PVC Joints/Fittings</b>	\$1.00	4
<b>PVC Pipes</b>	\$2.50 (per foot)	6
<b>Rubber Bands</b>	\$0.15	10
<b>Sketch Paper</b>	\$1.00	1
<b>Styrofoam</b>	\$2.00	1
<b>Swivel Wheels</b>	\$1.50	2
<b>Twine</b>	\$0.50 (per yard)	10
<b>Washers</b>	\$0.10	7
<b>Ziplock Bags (Gallon)</b>	\$0.50	2
<b>Zipties</b>	\$0.25	8

## Starter Kit Contents

- 1 x 5-gallon Bucket
- 1 x Yardstick
- 1 x Pair of Scissors
- 1 x Notepad
- Writing Utensil(s)

## Team Room Assignments

Team Number	Team Name	Room Assignment
1	Electric Bois	PFT 1236
2	Designsteins	PFT 1218
3	Squish Squash Squad	PFT 1240
4	The Snacks that Smile Back	PFT 1258
5	I SHPE IT	PFT 1206
6	Team Caniac Combo Replace Coleslaw With Toast	PFT 1253
7	Cool People and Sophie	PFT 1216
8	A Priest, a Rabbi, and a Minister Walk into a Bar	PFT 1240
9	Enganerds	PFT 1244
10	50/50	PFT 1258
11	Dream Team	PFT 1240
12	Fragile Ego Squad	PFT 1206
13	The Lean Machine	PFT 1236
14	Team Humanities + 3	PFT 1253
15	The Mega Hurts	PFT 1218
16	Team Purple	PFT 1206
17	Middleton's Serfs	PFT 1216
18	IEEE LSU Ace Squad	PFT 1244
19	The STEMinists	PFT 1218
20	Elks	PFT 1236
21	Team Bagel	PFT 1253
22	Sick Outrageous Six (SOS)	PFT 1216
24	Bengal Robotics ME's (BRMEs)	PFT 1258
25	Knightling Boltz	PFT 1212
26	Dominican Engineering	PFT 1212
27	EZ Money	PFT 1212
28	ASME_LSU	PFT 1244



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## Materials Order Form

Team Name: \_\_\_\_\_

Materials	Amount
16oz Mason Jars	
Aluminum Wire Rod Armature - 1/8"	
Balsa Wood	
Bendy Straws	
Binder Clips	
Blank CDS	
Bucket Lids	
Bungee Cords (Mini and Loop)	
Bungee Cords (Red and Blue)	
Bungee Cords (Yellow and Green)	
Cardboard	
Clothes Pins	
Dowel Sticks	
Duct Tape	
Fishing Line	
Hot Glue Sticks	
Large Construction Paper	
Magnets	
Paper Plates	
Ping Pong Balls	
Pipe Cleaners	
Plastic Cups	
Popsicle Sticks	
Poster Board	
Push Pins	
PVC Joints/Fittings	
PVC Pipes	
Rubber Bands	
Sketch Paper	
Styrofoam	
Swivel Wheels	
Twine	
Washers	
Ziplock Bags (Gallon)	
Zipties	