

# Texas Higher Education

## *“Formula Funding 101”*

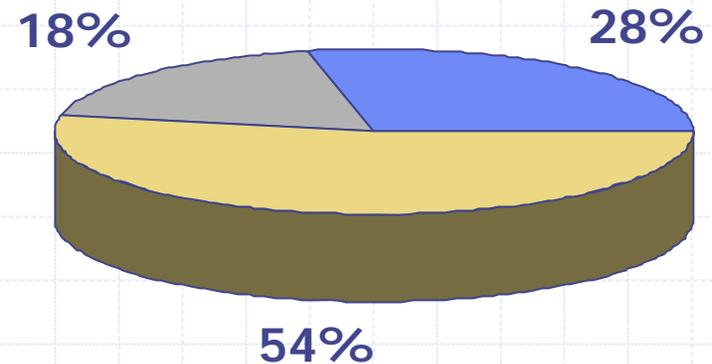
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Planning & Institutional Effectiveness

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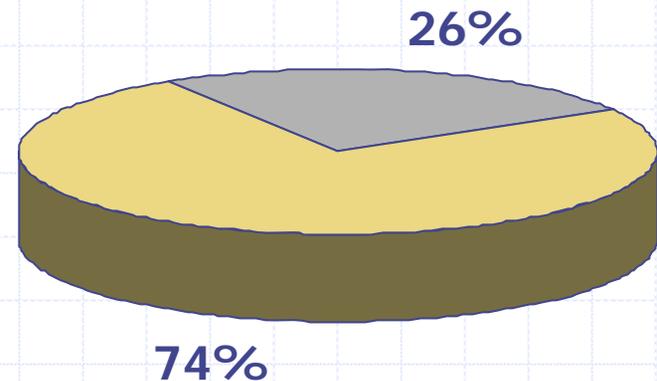
# Significance of the Funding Formulas

- ◆ Over half of our FY 2003 appropriation was generated through the funding formulas



# Flexible, discretionary income

- ◆ When one looks only at the funds NOT tied to specific uses...
- ◆ Formula generated dollars account for almost three quarters of our flexible use funds

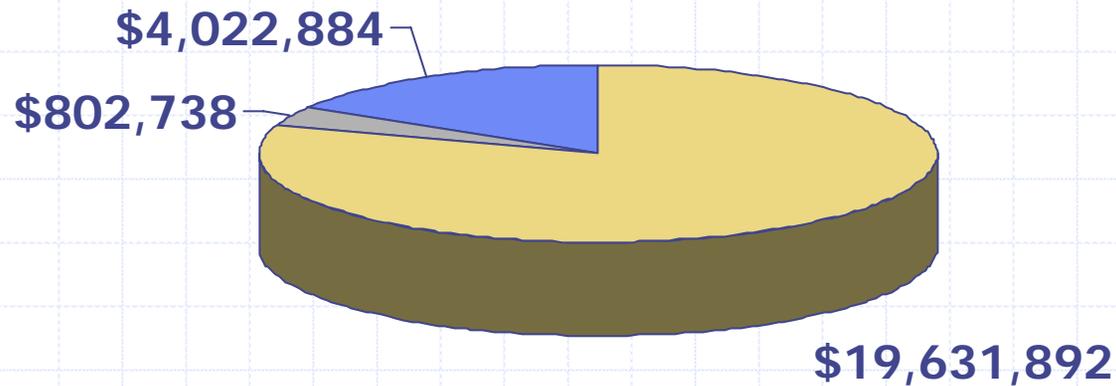


■ Formula Funds  
■ Other Discretionary (enhancement, etc.)

Because they are such an important revenue source, we need to understand the formulas

- ◆ Understanding how the formulas work to generate money can help us devise strategies to maximize the income the formula system provides.
- ◆ There are two major formulas and one smaller one:
  - Instruction and Operations
  - E&G Space
  - Teaching Experience

# FY 2003 Income by Formula



- Instruction and Operations
- Teaching Experience Supplement
- Infrastructure Support

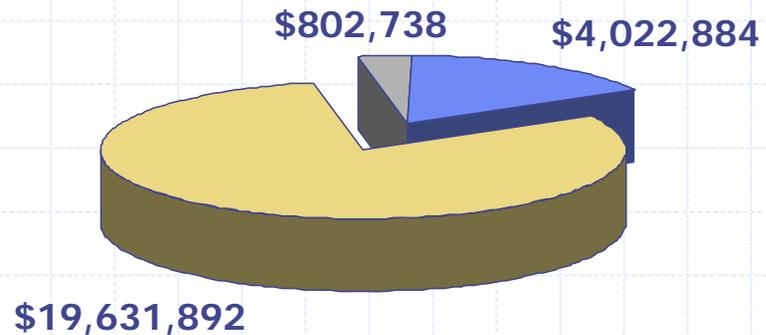
# The Importance of Credit Hours

- ◆ All three formulas are driven solely or partly by semester credit hours taught
  - The **Instruction and Operations** formula is driven totally by credit hours.
  - The **Teaching Experience** formula is driven by the number of undergraduate credit hours taught by tenured or tenure-track faculty.
  - The **Infrastructure Support** formula, in addition to credit hours taught, includes academic program mix, staff size, research expenditures, and Library collection size.

# The financial importance of instruction

- ◆ No matter how we feel about it, the fact is that the important *research* and *service* missions of the university bring with them virtually no direct formula income.
- ◆ From the formula's perspective, *teaching* is the only thing that counts in generating state funding.

# The Instruction and Operations Formula



- Instruction and Operations
- Teaching Experience Supplement
- Infrastructure Support

# What functions is it designed to fund?

- ◆ Faculty salaries
- ◆ Departmental operating expense
- ◆ Library
- ◆ Instructional support
- ◆ Research enhancement
- ◆ Student services
- ◆ Institutional support

# How does the formula generate funds?

◆ Two basic concepts:

- Weighted Semester Credit Hours
- Base period

# The “Base Period”

- ◆ The base period is the 12 month period used to measure the SCH to be included in the appropriations formulas.
- ◆ It is the summer and fall of even numbered years and the spring of odd numbered years.
- ◆ This “base period” provides the most recent year of semester credit hour data available when the legislature meets in the spring of odd numbered years.
- ◆ Base period SCH determines formula appropriations for the next two years.

# What are weighted credit hours?

- ◆ We are funded by the number of credit hours we teach in the base period, but not all credit hours are funded at the same dollar value.
  - Conceptually, the formula weighting is supposed to reflect the differences in cost related to teaching courses at different levels and in different academic fields.
  - Graduate courses, for example, are expected to be taught in smaller class sections than undergraduate classes so graduate credit hours are weighted heavier than undergraduate credit hours.

# What are weighted credit hours?

- ◆ Courses in different fields are also weighted relative to each other.
  - For example, a credit hour in a lower division History course earns less formula funding than a lower division course in Art or Engineering.
  - All these weightings are displayed in a chart called the “Formula Matrix”.

# The weighting matrix

<b>Weighting</b>	<b>Lower Div</b>	<b>Upper Div</b>	<b>Masters</b>	<b>Doctoral</b>
<b>Liberal Arts</b>	<b>1.00</b>	<b>1.96</b>	<b>3.94</b>	<b>12.04</b>
<b>Science</b>	<b>1.53</b>	<b>3.00</b>	<b>7.17</b>	<b>19.29</b>
<b>Fine Arts</b>	<b>1.85</b>	<b>3.11</b>	<b>6.51</b>	<b>17.47</b>
<b>Teacher Education</b>	<b>1.28</b>	<b>1.96</b>	<b>3.23</b>	<b>9.95</b>
<b>Agriculture</b>	<b>2.05</b>	<b>2.54</b>	<b>6.64</b>	<b>16.37</b>
<b>Engineering</b>	<b>3.01</b>	<b>3.46</b>	<b>8.20</b>	<b>21.40</b>
<b>Home Economics</b>	<b>1.58</b>	<b>2.12</b>	<b>4.34</b>	<b>10.79</b>
<b>Social Services</b>	<b>1.64</b>	<b>1.84</b>	<b>5.80</b>	<b>11.92</b>
<b>Vocational Training</b>	<b>1.45</b>	<b>2.59</b>	<b>-</b>	<b>-</b>
<b>Physical Training</b>	<b>1.36</b>	<b>1.36</b>	<b>-</b>	<b>-</b>
<b>Health Services</b>	<b>2.87</b>	<b>3.46</b>	<b>6.47</b>	<b>15.98</b>
<b>Business Admin</b>	<b>1.41</b>	<b>1.59</b>	<b>4.59</b>	<b>13.91</b>
<b>Teacher Practice</b>	<b>2.43</b>	<b>2.57</b>	<b>-</b>	<b>-</b>
<b>Technology</b>	<b>1.99</b>	<b>2.56</b>	<b>6.61</b>	<b>-</b>
<b>Nursing</b>	<b>4.91</b>	<b>5.32</b>	<b>6.49</b>	<b>16.32</b>

# Weighted Credit hours

- ◆ Weighted credit hours are credit hours taught multiplied by the weighting matrix
- ◆ For example:
  - A 3 hour lower division history course with 20 students enrolled would generate **60** weighted SCH (20 students x 3 SCH x 1.00 weight)
  - A 3 hour masters level business course with 20 students enrolled would generate **275** weighted SCH (20 students x 3 SCH x 4.59 weight)
  - A 3 hour doctoral education course with 20 students enrolled would generate **597** weighted SCH (20 students x 3 SCH x 9.95 weight)

# Getting from weighted SCH to Instruction & Operations income

- ◆ Each biennium the appropriations act specifies the dollar value of each weighted semester credit hour.
  - For FY 03, the value is \$56.65 per weighted SCH
- ◆ So, looking at our examples again:
  - The lower division history course earned **\$3,399**  
(60 wsch x \$56.65)
  - The masters business course earned **\$15,601**  
(275 wsch x \$56.65)
  - The doctoral education course earned **\$33,820**  
(597 wsch x \$56.65)

# Income from a 3 credit hour class with 20 students enrolled

I/O Income	Lower Div	Upper Div	Masters	Doctoral
Liberal Arts	3,399	6,662	13,392	40,924
Science	5,200	10,197	24,371	65,567
Fine Arts	6,288	10,571	22,127	59,381
Teacher Education	4,351	6,662	10,979	33,820
Agriculture	6,968	8,633	22,569	55,642
Engineering	10,231	11,761	27,872	72,739
Home Economics	5,370	7,206	14,752	36,675
Social Services	5,574	6,254	19,714	40,516
Vocational Training	4,929	8,803	-	-
Physical Training	4,623	4,623	-	-
Health Services	9,755	11,761	21,992	54,316
Business Admin	4,793	5,404	15,601	47,280
Teacher Practice	8,260	8,735	-	-
Technology	6,764	8,701	22,467	-
Nursing	16,689	18,083	22,060	55,472

# The relationship between formula income, class size, and instructional cost

- ◆ FY 2003 average 9 month faculty salary
  - \$56,132
- ◆ Average salary per course assuming 8 courses per year (4/4 teaching load)
  - \$7,016 ( $\$56,132 / 8$ )
- ◆ Average salary per course assuming 6 courses per year (3/3 teaching load)
  - \$9,355 ( $\$56,132 / 6$ )

# Average class size needed to pay average faculty salary cost at 4/4 load using all of the I/O formula income generated

<b>4/4 load (\$7,016)</b>	<b>Lower Div</b>	<b>Upper Div</b>	<b>Masters</b>	<b>Doctoral</b>
<b>Liberal Arts</b>	<b>41.3</b>	<b>21.1</b>	<b>10.5</b>	<b>3.4</b>
<b>Science</b>	<b>27.0</b>	<b>13.8</b>	<b>5.8</b>	<b>2.1</b>
<b>Fine Arts</b>	<b>22.3</b>	<b>13.3</b>	<b>6.3</b>	<b>2.4</b>
<b>Teacher Education</b>	<b>32.3</b>	<b>21.1</b>	<b>12.8</b>	<b>4.1</b>
<b>Agriculture</b>	<b>20.1</b>	<b>16.3</b>	<b>6.2</b>	<b>2.5</b>
<b>Engineering</b>	<b>13.7</b>	<b>11.9</b>	<b>5.0</b>	<b>1.9</b>
<b>Home Economics</b>	<b>26.1</b>	<b>19.5</b>	<b>9.5</b>	<b>3.8</b>
<b>Social Services</b>	<b>25.2</b>	<b>22.4</b>	<b>7.1</b>	<b>3.5</b>
<b>Vocational Training</b>	<b>28.5</b>	<b>15.9</b>	<b>-</b>	<b>-</b>
<b>Physical Training</b>	<b>30.4</b>	<b>30.4</b>	<b>-</b>	<b>-</b>
<b>Health Services</b>	<b>14.4</b>	<b>11.9</b>	<b>6.4</b>	<b>2.6</b>
<b>Business Admin</b>	<b>29.3</b>	<b>26.0</b>	<b>9.0</b>	<b>3.0</b>
<b>Teacher Practice</b>	<b>17.0</b>	<b>16.1</b>	<b>-</b>	<b>-</b>
<b>Technology</b>	<b>20.7</b>	<b>16.1</b>	<b>6.2</b>	<b>-</b>
<b>Nursing</b>	<b>8.4</b>	<b>7.8</b>	<b>6.4</b>	<b>2.5</b>

# Average class size needed to pay average faculty salary cost at 3/3 load using all of the I/O formula income generated

<b>3/3 load (\$9,355)</b>	<b>Lower Div</b>	<b>Upper Div</b>	<b>Masters</b>	<b>Doctoral</b>
<b>Liberal Arts</b>	<b>55.0</b>	<b>28.1</b>	<b>14.0</b>	<b>4.6</b>
<b>Science</b>	<b>36.0</b>	<b>18.3</b>	<b>7.7</b>	<b>2.9</b>
<b>Fine Arts</b>	<b>29.8</b>	<b>17.7</b>	<b>8.5</b>	<b>3.2</b>
<b>Teacher Education</b>	<b>43.0</b>	<b>28.1</b>	<b>17.0</b>	<b>5.5</b>
<b>Agriculture</b>	<b>26.9</b>	<b>21.7</b>	<b>8.3</b>	<b>3.4</b>
<b>Engineering</b>	<b>18.3</b>	<b>15.9</b>	<b>6.7</b>	<b>2.6</b>
<b>Home Economics</b>	<b>34.8</b>	<b>26.0</b>	<b>12.7</b>	<b>5.1</b>
<b>Social Services</b>	<b>33.6</b>	<b>29.9</b>	<b>9.5</b>	<b>4.6</b>
<b>Vocational Training</b>	<b>38.0</b>	<b>21.3</b>	<b>-</b>	<b>-</b>
<b>Physical Training</b>	<b>40.5</b>	<b>40.5</b>	<b>-</b>	<b>-</b>
<b>Health Services</b>	<b>19.2</b>	<b>15.9</b>	<b>8.5</b>	<b>3.4</b>
<b>Business Admin</b>	<b>39.0</b>	<b>34.6</b>	<b>12.0</b>	<b>4.0</b>
<b>Teacher Practice</b>	<b>22.7</b>	<b>21.4</b>	<b>-</b>	<b>-</b>
<b>Technology</b>	<b>27.7</b>	<b>21.5</b>	<b>8.3</b>	<b>-</b>
<b>Nursing</b>	<b>11.2</b>	<b>10.3</b>	<b>8.5</b>	<b>3.4</b>

# The formula game

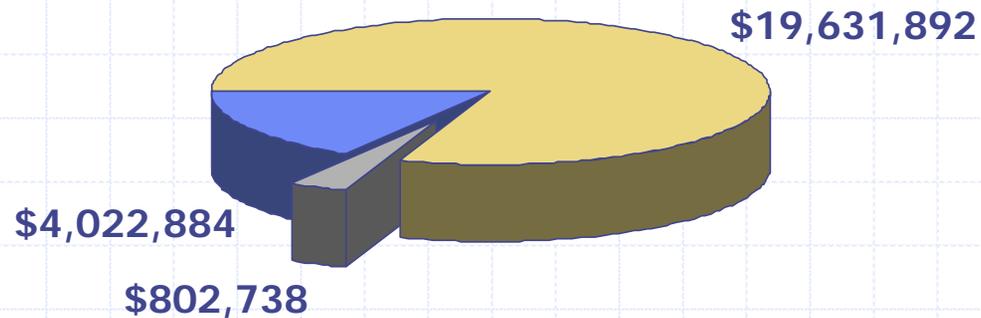
- ◆ Obviously, we should teach as few lower division courses as we can because the higher level ones pay so much better
- ◆ But, there is a catch....
  - Funding level is set at the **LOWER** of either the level of the course **OR** the level of the student enrolled in it.
  - So, if a freshman student enrolls in an upper division course we only get lower division formula weighting for that student.
  - If a senior student enrolls in a lower division course, we also get lower division funding based on the level of the course.

# The formula game

## ◆ Some winning strategies:

- Maintain good retention rates so freshman and sophomore students survive to be juniors and seniors.
- Aggressively recruit more transfer students (somebody else has already taught them the low-income SCH).
- Keep the curriculum as lean as is academically responsible in order to avoid teaching small classes.
- Understand the economics of small classes, especially at the lower division (think more in terms of minimum income than minimum size). Some have to be small, but others must be large enough to make the formula numbers work.
- Advise juniors and seniors to take electives in 3000 and 4000 level courses, not lower division courses.
- Obviously, having strong graduate enrollment per section is critical.

# Teaching Experience Supplement



- Instruction and Operations
- Teaching Experience Supplement
- Infrastructure Support

# Teaching Experience

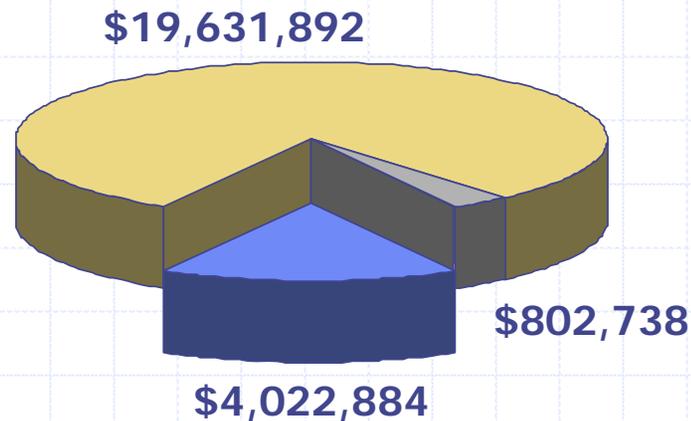
- ◆ This is a simple add-on to the Instruction and Operations formula.
- ◆ It provides an extra 10% formula income bonus for undergraduate credit hours that are taught by tenured and tenure track faculty.
- ◆ The intent is to reward institutions for NOT using TAs and Adjuncts to teach undergraduates.
  - The key thing to remember here is that 0-credit science labs can be taught by TAs without penalty.
  - Only sections that carry credit count.

# Teaching Experience

## ◆ Winning strategies:

- Remember that the game is weighted undergraduate credit hours taught.
- Be sure that all the **big** undergraduate classes, especially in highly weighted fields, are taught by tenured or tenure track faculty.
- As a strategy, this is more important to us financially than losing money trying to teach every small intro class with expensive faculty.
- At the 10% bonus level, there is still not enough extra funding on the table to offset the salary of senior faculty teaching lower division classes of 15 or 20.

# Infrastructure Support Formula



- Instruction and Operations
- Teaching Experience Supplement
- Infrastructure Support

# Infrastructure Support

- ◆ Funded on a space need projection model developed by the Coordinating Board
- ◆ ***Not on the space you actually have***
- ◆ The model has five dimensions:
  - Teaching Space
  - Library Space
  - Research Space
  - Office Space
  - Support space

# Infrastructure Support

## ◆ Teaching Space

- Divides academic programs into 3 groups:
  - ◆ Low, medium, and high space intensive
    - Low are liberal arts, business, etc.
    - Medium are lab sciences and computer science
    - High are engineering, agriculture, and visual arts
- Calculates FTE students in each group by level of program
- Applies ratios of square feet per FTE student by type of room (classrooms, labs, etc)
- Multiplies this all to get a predicted teaching space need

# Infrastructure Support

## ◆ Library Space

- Collection size
- Number and level of degree programs
- FTE students
- FTE Faculty

◆ There is a square foot per unit standard on each of the dimensions.

◆ They are multiplied and added together to get the predicted total square feet.

# Infrastructure Support

## ◆ Research Space

- 9,000 square feet per \$1.2 million in research expenditures
- Or 3 square feet per FTE student
- Whichever is larger

# Infrastructure Support

## ◆ Office Space

- Faculty FTE
- Staff FTE (based on 1.8 staff FTE per faculty FTE)
- Office space can be calculated various ways, but the most straightforward is to multiply Faculty FTE by 190 square feet and staff FTE by 170 square feet and add them together.

# Infrastructure Support

## ◆ Support Space

- Support space includes storage, computer rooms, shops, vehicle storage, etc.
- It is simply calculated at 9% of the total of the four other kinds of space.

# Infrastructure Support

## ◆ Winning strategies:

- Remember, the money comes in according to what the model says you **should** have, not what you **do** have.
- Not a lot of strategies here, but
  - ◆ The approach is to control costs where you can and invest in prevention.
  - ◆ Be as energy efficient as possible.
  - ◆ Keep up with preventative maintenance.

# Conclusion

◆ These are our three main formula income sources

- We have opportunities to maximize the formula income we generate by working smarter not harder.
- Through careful analysis we can discover creative ways to make the formulas work for us more efficiently, in ways that do not “trade quality for income.”

# Finally...

- ◆ It is important to grow in weighted semester credit hours at a rate at least as fast as the state as a whole.
- ◆ Why? Because the formulas are used as a mechanism to *distribute* higher education funding.
- ◆ Since formula distribution is a zero-sum game, universities growing slower than average end up with smaller pieces of the funding pie, while fast growing institutions benefit.