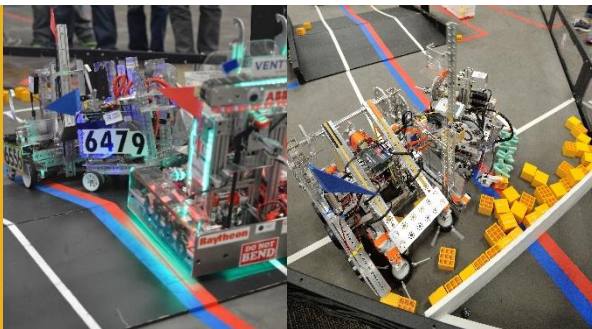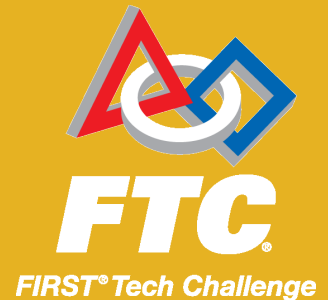# Mississippi *FIRST* Tech Challenge Robotics Program

The *FIRST®* Tech Challenge (FTC) is a mid-level robotics program aimed at students typically aged 13-18. Teams of up to 15 students are responsible for designing, building, and programming their robots to compete in an alliance format against other teams. The robot kit is reusable from year-to-year and is programmed using a variety of languages. Teams, including coaches, mentors and volunteers, are required to develop strategy and build robots based on sound engineering principles. Awards are given for the competition as well as for community outreach, design, and other real-world accomplishments.
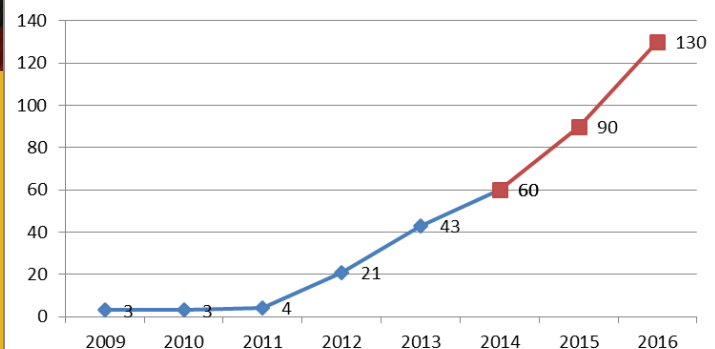
FTC started 10 years ago in Mississippi, however only 3-4 teams embraced it. It wasn't until the University of Mississippi decided to make it a STEM Outreach program that it started to really grow. Since 2012, when UM officially became the FTC Affiliate Partner, the number of FTC teams grew from 4 to 21. It was followed by another great year of growth to 43 teams at the end of 2013-14. The outreach was all over the state from suburban schools and organizations in Jackson, Oxford, and the Gulf Coast to rural schools in the southwest, northwest, and the Mississippi Delta.

> *"I loved this competition!!! My kids have learned more than I thought they were able to at their age. I have an ICT3 Cert and I can't program in text, but now my kids can! This has been a rewarding experience because my kids have learned to work together to solve problems when under pressure. They learned not to give up when their robot was in serious trouble. I am really proud of them for wanting to take a chance and do something they really didn't think they could do. Thanks for offering us this great opportunity. We will be back next year with robot in hand!"* said one Mississippi Teacher and FTC Coach.

In the two short years of focus, FTC has provided Mississippi students with opportunities to experience engineering and robotics first-hand through challenges and teamwork. The program has had a direct impact on over 500 students and has sponsored two scholarships to the University of Mississippi beginning in 2014. By continued organic growth throughout the state, FTC will become the leading robotics and STEM-oriented program in Mississippi.

THE UNIVERSITY OF MISSISSIPPI
1848
CENTER FOR MATHEMATICS AND SCIENCE EDUCATION

Mississippi Team Growth

Year	Teams
2009	3
2010	3
2011	4
2012	21
2013	43
2014	60
2015	90
2016	130

Mississippi FTC Budget

After teams sign up and pay for their FTC registration fee ($275), the Center for Mathematics and Science Education (CMSE) provides each new team everything they would need to build a basic competitive robot. This includes a robot kit of parts, a tips and tricks book, a dozen safety glasses, the Samantha WiFi module, use of a UM laptop computer, and direct training on the mechanics and programming of the robot. At the end of the season, the teacher/coach is given a $250 stipend. Total cost for all first year teams averages to about $2500/team. Teams that return for a second year are given $400 worth of extra parts, more training, and a year-end stipend. Total cost for all second year teams is about $800/team.

Other program costs include event expenses (volunteer food and shirts, insurance, table rental, facility rental, field elements, etc.). There are also program expenses for administering FTC for the entire state of Mississippi (travel, outreach, partner conference, demonstration expense, etc.). Finally, there is a salary line item for the Program Manager with the addition of a part-time worker starting in 2015-16 program year.

Expenses by the team include the annual registration fee to FIRST, event registration fees for qualifiers and championship, travel expenses, extra parts, shirts, and food. On average, a Mississippi team's annual budget is $1000 - $5000.

We cannot do this without the generous donations from our sponsors. Donor opportunities include event sponsorship, field and pit naming rights, team sponsorship, or undesignated donations to help sustain the program. All sponsors of $5000 or more will be recognized at all Mississippi FTC events.

Year	2012-13	2013-14	2014-15	2015-16	2016-17
Total # of teams	22	43	50	90	120
New teams	18	21	24	34	45
2nd year	0	19	18	22	28
Veteran Teams	4	3	18	34	47
Qualifiers	0	5	6	9	12
Championships	1	1	1	1	1
Scrimmages	2	2	4	6	8
Salary	$ 65,000	$ 67,000	$ 69,000	$ 105,600	$ 143,300
Startup Costs	$ 10,000	$ 10,000	$ 10,000	$ 15,000	$ 15,000
New teams	$ 45,000	$ 52,500	$ 60,000	$ 85,000	$ 112,500
2nd year	$ -	$ 15,200	$ 14,400	$ 17,600	$ 22,400
Veteran Teams	$ -	$ -	$ 3,600	$ 6,800	$ 9,400
Qualifiers	$ -	$ 12,500	$ 15,000	$ 22,500	$ 30,000
Championships	$ 3,000	$ 3,000	$ 5,000	$ 5,000	$ 5,000
Scrimmages	$ 2,500	$ 2,500	$ 5,000	$ 7,500	$ 10,000
Total Costs	$ 125,500	$ 162,700	$ 182,000	$ 265,000	$ 347,600

FTC Expense Breakdown

- Salary — 42%
- Startup Costs — 6%
- New teams — 33%
- 2nd year — 6%
- Veteran Teams — 2%
- Qualifiers — 7%
- Championships — 2%
- Scrimmages — 2%

Total Costs

2012-13	2013-14	2014-15	2015-16	2016-17
$125,500	$162,700	$182,000	$265,000	$347,600

Mannie Lowe, *FIRST* Program Manager | CMSE – University of Mississippi | P.O. Box 1848 | University, MS 38677
662-915-6621 | 404-626-6431 | mlowe@olemiss.edu | http://msftc.org | http://umcmse.com