BUSINESS PLAN FOR A BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCES/MEDICAL TECHNOLOGY/TECHNOLOGIST (MLS) PROGRAM

Accredited by the National Accrediting Agency for Clinical Laboratory Sciences' (NAACLS) on the St. Petersburg Campus

May 1, 2020

UNIVERSITY of SOUTH FLORIDA

BUSINESS PLAN FOR A NAACLS-ACCREDITED MLS BS PROGRAM ON THE USF ST. PETERSBURG CAMPUS

April 2020

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1. Project Background & Description

The University of South Florida is one of four institutions in the State University System of Florida (SUS) authorized to deliver a bachelor's degree program in CIP 51.1005, Clinical Laboratory Science/Medical Technology/Technologist[1], also referred to as MLS programs. The other three SUS institutions are the University of Central Florida (UCF), University of West Florida (UWF), and Florida Gulf Coast University (FGCU). MLS programs prepare bachelors level graduates for positions in medical laboratory facilities to perform the testing that is necessary for detecting, diagnosing and treating of diseases, as well as for the monitoring and maintenance of patient health. Employers require that MLS practitioners hold national certification through the American Society for Clinical Pathology (ASCP)[2] and/or in some states, including the State of Florida, hold state licensure.[3] Certification and licensure eligibility require passing of an ASCP Board Certification Exam. Only individuals completing a National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)[4] accredited education program are eligible to sit for the ASCP

[1] https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=88795

[2] https://www.ascp.org/content/docs/default-source/boc-pdfs/exam-content-outlines/ascp-boc-us-procedures-book-web.pdf

[3] https://floridasclinicallabs.gov/

[4] https://www.naacls.org/getattachment/b58c2104-4020-4c22-b597-0c8e44cec867/NAACLS-Guide-to-Accreditation-and-Approval-Edited.aspx

Board Certification Exam. While UCF, UWF and FGCU are NACCLS accredited, USF's current bachelors' degree program is not. Rather, students at USF complete three years on campus in didactic coursework that prepares them for application to a NACCLS accredited hospital-based 1-year education program. Historically, USF students apply to one of three NACCLS accredited hospital-based programs to complete their training: Tampa General Hospital in Tampa, Bayfront Hospital in St. Petersburg or St. Vincent's Hospital in Jacksonville. Acceptance into these programs is competitive, and limits the number of students who graduate from USF with an MLS bachelor's degree to an average of only 7-9 per year as shown in Table 1.

Table 1. Completion Data in CIP 52.1005

	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016	2014-2015	Grand Total
	9	7	7	6	8	7	44

While historical enrollment data for the MLS program shown in Table 2 varies per year, clearly indicate a reasonable demand for the program, the majority of students are unable to complete the program due to limited positions in the 1-year hospital based education programs as described above.

Table 2. Enrollment Data in CIP 51.1005

	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016	2014-2015	Grand Total
	98	**111**	**110**	**106**	**127**	**141**	**380**
Lower	22	18	21	22	25	33	110
Upper	79	94	92	84	108	112	308

2. Project Scope

The current MLS program at USF, the Bachelor of Science (BS) in Medical Technology, is offered through the Department of Chemistry in the College of Arts and Sciences (CAS) on the Tampa campus. In addition to seeking NACCLS' accreditation, USF is exploring housing the BS Medical Technology program on the St. Petersburg campus. The St. Petersburg campus provides close proximity to two of the NACCLS accredited hospital-based programs with whom we have traditionally partnered for MLS education, Tampa General Hospital and Bayfront Hospital; as well as to other potential partners, including but not limited to BayCare and Johns Hopkins. All Children's. The introduction of this program on the St. Petersburg campus will support the growth of new programs at this branch campus. USF would seek NACCLS accreditation within next two years. This document makes the case that investments in a NACCLS-accredited MLS program to be housed on USF's St. Petersburg campus will provide adequate returns in a reasonable period of time and outlines the total investments required to start (non-recurring) and maintain (recurring) an accredited BS MLS program.

3. Demand Analysis

Jobs requiring an MLS Bachelor's Degree are expected to grow over the next decade. Nationally, the U.S. Bureau of Labor Statistics[5] predicts that openings for MLS professionals (both technicians requiring a two year degree and technologists requiring a four-year degree) will increase by 11 percent between 2018 and 2028. Burning Glass confirms this upward trend, projecting that jobs requiring an MLS BS degree are expected to grow over the next decade, by 20.7 percent nationally and by 25.5 percent in the Tampa Bay region, while remaining steady at the state level.[6] During the last 12 months (March 2019 to March 2020), 431 jobs matching the MLS/MLT criteria were posted in the state of Florida and 88 jobs were posted regionally in the Tampa/St. Petersburg/Clearwater region.[7] According to Burning Glass, the average salary for this field is approximately $72,000 both nationally and regionally, which is above the average national and regional living wage.[8]

While demand for MLS BS graduates in the state is projected to remain fairly steady, students graduating are not sufficient to fulfill current demand. Recently Tampa Bay Works[9] through its Healthcare Collaborative identified a regional need to fill approximately 600 medical laboratory scientist positions that will become available over the next six years. Part of its strategy is to increase the talent pipeline which includes significantly increasing the throughput of medical laboratory scientists from USF's program. A key component to increasing throughput is for USF to seek NACCLS accreditation for its program.

4. Resources Needed

- NAACLS Accreditation
- Annual Maintenance and Staff Budget
- Staff: 2 FTE faculty positions, with one designated as Program Director / Program Assistant
- Lab equipment (see itemized list)
- 1,500 sq ft of lab space

5. Challenges

- One of the biggest challenges USF faces with moving forward in seeking NACCLS' accreditation for its MLS hospitals will be availability of clinical rotations. In response to needs expressed previously for MLS personnel, Hillsborough Community College (HCC) began a post-bachelors' program,[10] and thus there is competition for potentially limited

[5] https://www.bls.gov/ooh/healthcare/clinical-laboratory-technologists-and-technicians.htm#tab-6
[6] See Addendum III
[7] See Addendum III
[8] See Addendum III
[9] http://tampabayworks.org/
[10] https://www.hccfl.edu/academics/subjects/health-and-medical/medical-laboratory-science-atc/medical-laboratory-science-atc

clinical rotation placements. The Tampa Bay Works' Healthcare Collaborative is aware of the need to foster collaboration across the USF and HCC programs to optimize clinical rotation opportunities, fostering collaboration rather than competition.

- Another challenge is USF's lack of faculty with MLS credentials. Prior to submission of an initial application to NACCLS, a faculty member with MLS credentials will need to be hired and identified as the Program Director.
- A third challenge is the cost of accrediting the program and building out the required resources, i.e. hiring adequate faculty, creating lab space, and purchasing equipment. Additionally, the costs associated with purchasing and maintenance of technical equipment will be difficult to cover, in the short-term, through student tuition and fees alone.

6. Assumptions

- There is workforce demand to support USF graduating a minimum of 30 students per year.
- USF cannot generate sufficient revenue to self-sustain the proposed new delivery model and would need: (a) new support from the State; (b) direct support from business & industry, (c) philanthropic support; and/or (d) a redeployment of existing University/campus resources.
- USF would cooperate with other state universities, such as UCF, and Florida State Colleges, such as Hillsborough Community College, so programs were complementary and mutually supportive.
- The regional business community would assist with advisory board members, funds for startup and recurring programming, scholarships for MLS students (naming opportunities); lab buildout (naming opportunity) and equipment; clinical rotations; partnering to develop innovative education delivery models; and guaranteed employment at competitive salaries.

7. Implementation Timeline

March – April 2020

- Discovery period.

May 2020

- USF presents business plan to Tampa Bay Works.

May – August 2020

- Funding identified for program launch.

September 2020

- Hire program director.

October 2020

- USF President submits letter to NAACLS of initial application request.
- Program Director begins development of detailed timeline for first graduates of the new curriculum, with dependencies for: (a) curriculum revisions (need credentialed MSL faculty); (b) laboratory buildout, equipment purchases; and (c) clinical affiliations

November 2020

- Program Director submits initial application form and fee.
- Program Director submits Program Official Approval form along with required documentation requesting approval as Program Director.
- Begin recruitment of FTICs for St. Petersburg campus for Fall 2021 cohort for program.
- Internal communication to students re: program move to St. Petersburg campus for students who will be at junior level in Fall 2021.
- Faculty search for Fall 2021 begins.

January 2021

- Program Official Approval Form approval received from NAACLS encouraging USF to proceed with Preliminary Report submission (submit ~ 1 year before first class graduates).

Spring 2021

- Lab buildout and equipment purchasing begins.
- Curriculum revisions made and approved at all levels.
- MOUs completed with clinical laboratory sites.
- Faculty search completed.
- Staff search initiated.
- Update State College partners and develop FUSE pathways.

May 2021

- Preliminary Report with required documentation submitted to NAACLS

July 2021

- Preliminary Report approved by NACCLS (typically occurs within 2 months of receipt of preliminary report), with encouragement to submit the self-study.

August 2021

- Lab buildout and equipment purchasing complete.
- New faculty member hired.
- Begin junior year program at USF St. Petersburg Campus (with Preliminary Report approved we are to begin the first class in the program)
- FTICs begin in program
- Sophomores start second year coursework in program.
- Last year for Tampa-based program students to start 1-year hospital based programs.

November 2021

- Program Director submits self-study to NAACLS, with application fees.
- NAACLS grants “serious applicant status” and evaluates self-study (automatically awarded after self-study submitted along with application fees)

January - February 2022

- Self-study review occurs and results submitted to program.

February – March 2022

- Response to self-study submitted to NACCLS by Program Director.

April – May 2022

- NAACLS conducts site visit.

May-June 2022

- Site visit report received by USF (within 1.5 months following site visit)

May-July 2022

- Submit response to site visit within 1-month of receipt of report.

August 2022

- First Senior class begins new 4th year curriculum
- Junior level class begin (including AA transfers)
- Sophomores begin
- New FTIC cohort begins

May 2023

- First graduates of NAACLS accredited USF programs graduate

8. Draft Budget for the MLS BS Start Up

	Year 0	Year 1	Year 2	Year 3	Year 4	LTD
REVENUES						
Cost to Student for USF Program: In-state tuition (95%), OOS Tuition (5%) for a full-time undergraduate student per year@ 30 students per cohort year		$50,783	$346,341	$905,759	$1,221,450	$2,524,332
Lab fees, equipment/facility fees paid by students		$30,000	$60,000	$90,000	$120,000	$300,000
Total Revenues		**$80,783**	**$406,341**	**$995,759**	**$1,341,450**	**$2,824,332**
COSTS	**ONE-TIME**	**Recurring**	**Recurring**	**Recurring**	**Recurring**	
INSTRUCTIONAL COSTS						
o 1.0 FTE DIRECTOR ($120 K + FRINGE) — 12 mos	$156,000	$156,000	$159,120	$162,302	$165,548	$798,971
o 1 FTE Faculty/Instructors ($85 K + Fringe) — 9 mos		$110,500	$112,710	$114,964	$117,263	$455,438
PROGRAM SUPPORT						
o FTE Administrator/Adviser ($55 K + fringe) — 12 mos		$71,000	$72,420	$73,868	$75,346	$292,634
LAB BUILDOUT						
o Approx 1,500 sq ft lab space @ $300 per sq ft	$420,000					$420,000
EQUIPMENT & INSTRUMENTATION						
o See Addendum 1 - Sample Equipment List	$350,000					$350,000
Replacement Plan*		$30,000	$30,000	$30,000	$30,000	$120,000
SUPPLIES & MATERIALS (GLASSWARE, CHEMICALS ETC) (RECURRING) Initial year initial purchasing of glassware, holders, etc...)		$103,000	$40,000	$40,000	$40,000	$223,000
PROGRAM OPERATIONS (RECURRING)		$50,000	$50,000	$50,000	$50,000	$200,000
NEED-BASED & MERIT-BASED SCHOLARSHIPS - 5 per year		$32,500	$65,000	$97,500	$130,000	$325,000
NAACLS Accreditation Costs						$0
o Annual Accreditation Fee		$2,564	$2,692	$2,692	$2,692	$10,640
o One-Time Accreditation Costs	$3,000					$3,000
OTHER/MISCELLANEOUS						
o Lab Management System Software	$70,000					$70,000
o Trajecsys Report System		$3,000	$6,000	$9,000	$12,000	$30,000
Total Direct Costs	**$999,000**	**$558,564**	**$537,942**	**$580,327**	**$622,850**	**$3,298,683**
Recurring Overhead (Campus, College, Dept. services)		$139,641	$134,486	$145,082	$155,712	$574,921
Total Costs	**$999,000**	**$698,205**	**$672,428**	**$725,409**	**$778,562**	**$3,873,603**
Running Surplus / (Deficit)	**($999,000)**	**($1,616,423)**	**($1,882,509)**	**($1,612,159)**	**($1,049,271)**	**($1,049,271)**
Recurring Surplus/(Deficit)	*NA*	*($617,423)*	*($266,087)*	*$270,350*	*$562,888*	

DRAFT

Addendum I: Sample MLS Equipment List*

Description	Quantity
Ortho Vitros 350 Chemistry Analyzer	1
Pointe Scientific Pt180 Spectrophotometer	9
Pointe Scientific 180QT Spectrophotometer	1
Thermo Scientific Genesis Spectrophotometer	7
Drying Oven (electrophoresis)	1
Sysmex XN-330 Hematology Analyzer	1
Diffcount Ill - 8 button electronic counter	32
Manual Differential Counters	26
Hematek slide stainer	1
Micro-Capillary Centrifuge	2
Ortho MTS Centrifuge	3
Ortho MTS Incubator	3
lmmucor Capture System (cell washer, incubator, light box)	1
Small light box	1
Agglutination lamps	18
Clay Adams Serofuges	16
Thermo Scientific Sorvall ST16 centrifuge	2
RevSpin 102 Microcentrifuge	1
Nasco Phlebotomy Arms	2
Refractometers	6
MLA Fixed Pipettors Assorted Sizes	160
Pipettors- variable	30
high definition ceiling mounted projection system	1
Kodak Slide Projector	1
Compaq Computer with Crestron Media System	1
Olympus Microscope with XLI Camera (used with media system)	1
Leica DM750 Microscopes	34
Helena Quick Gel Instrumentation System	1
Helena Quick Gel Chambers	4
Helena Cascade M-4 Coagulation Analyzer	1
Vortex Mixers	10
Fisher Clinical Card Rotator	5
Heating Blocks	16
Refrigerator with Freezer	1
Isotemp 2-door Refrigerator	2
Class II Biosafety cabinet	1
large phlebotomy chair	1
phlebotomy chair-small	2

*** Provided by University of Central Florida MLS Program Director**

Addendum II. USF MLS Curriculum (Current – to be revised)

Semester 1 (Fall)	**Credit Hours**
ENC 1101 Composition I	3
MAC 1105 or MAC 1147	3
CHM 2045 General Chemistry I	3
CHM 2045L General Chemistry I Lab	1
BSC 2010 Cellular Processes	3
BSC 2010L Cellular Processes Lab	1
Semester Hours:	**14**

Semester 2 (Spring)	**Credit Hours**
CHM 2046 General Chemistry II	3
ENC 1102 Composition II	3
CHM 2046L General Chem II Lab	1
BSC 2011 Biodiversity	3
BSC 2011L Biodiversity Lab	1
TGEC Gen Ed Creative Thinking	3
Semester Hours:	**14**

Summer	**Credit Hours**
SGES State Core Gen Ed Social Sciences	3
SGEH State Core Gen Ed Humanities	3
Semester Hours:	**6**

Semester 3 (Fall)	**Credit Hours**
CHM 2210 Organic Chemistry I	3
TGEE Gen Ed Ethical Reasoning and Civic Engagement	3
CHM 2210L Organic Chemistry Laboratory I	2
PCB 3023 Cell Biology	3
PCB 3023L Cell Biology Laboratory	1
Semester Hours:	**12**

Semester 4 (Spring)	**Credit Hours**
MCB 3020 General Microbiology	3
CHM 2211 Organic Chemistry II	3
TGEH Gen Ed High Impact Practice	3
TGED Gen Ed Human and Cultural Diversity	3
CHM 2211L Organic Chemistry Laboratory II	2
MCB 3020L General Microbiology Laboratory	1
Semester Hours:	**15**

Summer: Summer Opportunities

Semester 5 (Fall)	**Credit Hours**
MCB 4115 Determinative Bacteriology	3
MCB 4115L Determinative Bacteriology Laboratory	2
BCH 3053 General Biochemistry	3
General Elective	2
BSC 2085 Anatomy and Physiology I for Health Professionals	3
BSC 2085L Anatomy and Physiology Lab I for Nursing and other Healthcare Professionals	1
Semester Hours:	**14**

Semester 6 (Spring)	**Credit Hours**
Complete all pre-requisites for Internship	
HSC 4504 or PCB 4234	3
TGEI Gen Ed Information and Data Literacy	3
General Elective	1
STA 2023 Introductory Statistics I	3
BSC 2086 Anatomy and Physiology II for Nursing and other Healthcare Professionals	3
BSC 2086L Anatomy and Physiology Lab II for Nursing and other Healthcare Professionals	1
Semester Hours:	**14**

Summer: Summer Opportunities

Semester 7 (Fall)	**Credit Hours**
MLS 4862 Clinical Hematology	6
MLS 4865 Clinical Immunohematology	6
Semester Hours:	**12**

Semester 8 (Spring)	**Credit Hours**
MLS 4864 Clinical Chemistry	6
MLS 4863 Clinical Microbiology	6
General Elective	1
Semester Hours:	**13**

Summer	**Credit Hours**
MLS 4038 Introduction to Medical Technology	1
MLS 4860 Clinical Urinalysis and Body Fluids	2
MLS 4861 Clinical Immunology	2
MLS 4866 Clinical Laboratory Management and Education	1
Semester Hours:	**6**

Addendum III. Clinical Laboratory Science/ Medical Technology/ Technologist Employment Demand Analysis

Burning Glass Report, April 2020

Project Criteria

Validate	Programs
Location	Nationwide, State and Regional Data
Degree Level	Bachelor's degree
Time Period	4/1/2019 – 3/31/2020
Selected Programs	Clinical Laboratory Science/Medical Technology/Technologist (51.1005)
Career Outcomes mapped to Selected Programs of Study	Laboratory Manager

How many jobs are there for your graduates?

Nationwide: For your project criteria, there were 8,169 job postings Nationwide in the last 12 months.
Compared to:

- 37,330,999 total job postings in your selected location
- 13,055,485 total job postings requesting a Bachelor's degree in your selected location

The number of jobs is expected to grow over the next 10 years.

Statewide: For your project criteria, there were 431 job postings in Florida in the last 12 months.
Compared to:

- 2,148,049 total job postings in your selected location
- 684,997 total job postings requesting a Bachelor's degree in your selected location

The number of jobs is expected to stay the same over the next 10 years.

Regionally: For your project criteria, there were 88 job postings in the Tampa/St. Petersburg and Clearwater Region in the last 12 months.
Compared to:

- 432,420 total job postings in your selected location
- 151,380 total job postings requesting a Bachelor's degree in your selected location

The number of jobs is expected to grow over the next 10 years.

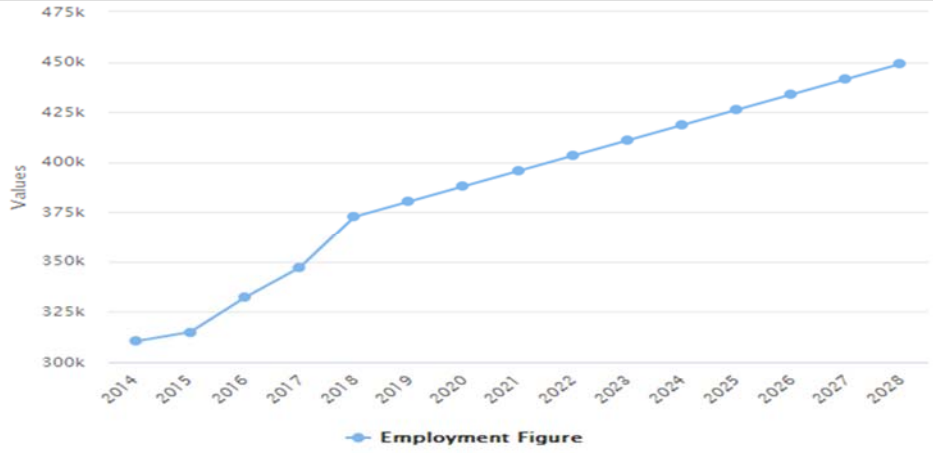
1. Growth by Geography

Geography	Selected Occupations	Total Labor Market	Relative Growth
Tampa, FL	25.69 %	12.83 %	High
Florida	NA	13.15 %	NA

Nationwide	20.50 %	5.78 %	High

2. How has Employment Changed for Career Outcomes of your Program?

Nationwide Data	**2014**	**2015**	**2016**	**2017**	**2018**	**2028**
Employment (BLS)	310,320	314,950	332,150	346,980	372,670	449,067
Florida Data	**2014**	**2015**	**2016**	**2017**	**2018**	**2028**
Employment (BLS)	321,510	326,810	344,280	361,420	372,670	449,067
Tampa/St. Petersburg/ Clearwater Data	**2014**	**2015**	**2016**	**2017**	**2018**	**2028**
Employment (BLS)	2,000	2,110	2,050	2,640	3,060	3,846



*Nationwide employment data between years 2019 and 2028 are projected figures.

3. Details by Occupation

Occupation Group	***Postings***	***LQ***	***Employment (2018)***	***Employment Growth (2017 - 2018)***	***Projected Employment Growth (2019-2028)***
Nationwide Data					
Clinical Research	8,169	NA	372,670	7.4%	20.5%
Florida Data					
Clinical Research	431	0.9	NA	NA	NA
Tampa/St. Petersburg/ Clearwater Data					
Clinical Research	88	1.3	3,060	15.9%	25.7%

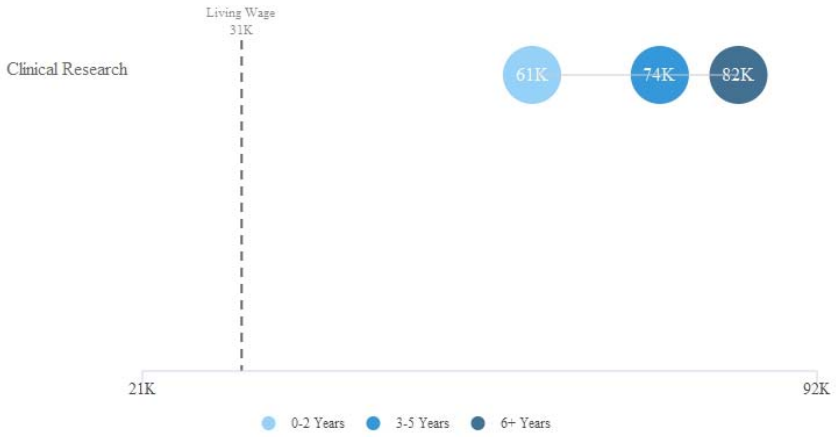
How Versatile is my Program?

Graduates of this program usually transition into any of the 1 different occupation groups:

Occupations Group	*Market Size (postings)*	*Percentage of Career Outcome demand*
Clinical Research **Florida Data**	*8,169*	*100.0%*
Clinical Research **Tampa/St. Petersburg/ Clearwater Data**	431	100.0%
Clinical Research	88	100.0%

What salary will my graduates make?

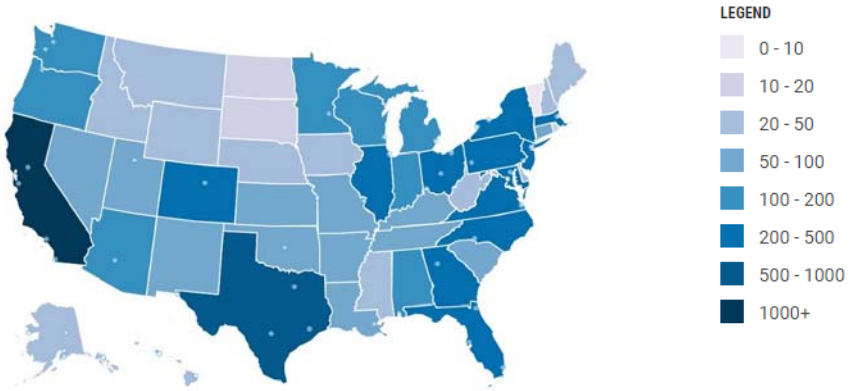
The average salary in the nation for graduates of your program is $72,479
This average salary is Above the average living wage for your region of 31450
The average salary in Florida for graduates of your program is $70,517
This average salary is Above the average living wage for Florida of 29619
The average salary in Tampa-St. Petersburg-Clearwater, FL for graduates of your program is $72,415
This average salary is Above the average living wage for Tampa-St. Petersburg-Clearwater, FL of 29141



Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	*0-2 Years*	*3-5 Years*	*6+ Years*
Clinical Research	*$60925*	*$74092*	*$81949*

Where is the Demand?



4. Top Locations by Posting Demand

Location	Postings
California	**1,507**
Texas	**778**
Florida	**431**
Massachusetts	**342**
New York	**334**
Ohio	**304**
Illinois	**301**
Pennsylvania	**258**
North Carolina	**230**
Virginia	**226**

Competitive Landscape

Overview

Nationwide Data	#	% Change (2014-2018)
Degrees Conferred	2,975	7%
Number of Institutions	301	-1%
Average Conferrals by Institution	10	11.10%
Median Conferrals by Institution	4	33.30%

Florida Data

	#	% Change (2014-2018)
Degrees Conferred	80	-2%
Number of Institutions	7	0%
Average Conferrals by Institution	11	-8.30%
Median Conferrals by Institution	11	10.00%

Institutions

Florida Data					
Institution	**School Type**	**Market Share (2018)**	**Market Share Change**	**Conferrals (2018)**	**Conferrals Change (2014-2018)**
The University of West Florida	Public	33.75%	-0.40%	27	-3.60%
University of Central Florida	Public	28.75%	0.70%	23	0.00%
Santa Fe College	Public	15.00%	5.24%	12	50.00%
Florida Gulf Coast University	Public	13.75%	-2.10%	11	-15.40%
University of South Florida-Main Campus	Public	8.75%	-3.45%	7	-30.00%
Saint Leo University	Private	0.00%	0.00%	0	0.00%
Jacksonville University	Private	0.00%	0.00%	0	0.00%