The University of Texas M. D. Cancer Center

Process | Plan | Institutional Capability | Involvement | Assessment

QEP Steering Committee

January 16, 2019

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

Steering Committee

AGENDA DATE TIME **LOCATION: SHP DEAN'S CONFERENCE ROOM**

MEETING CALLED BY

TYPE OF MEETING Steering Committee

NOTE TAKER

ATTENDEES

☐ Chair Dr. David Ford	☐ Dr. Jun Gu	☐ Dr. Bill Mattox
☐ Mark Bailey	☐ Dr. Brandy Greenhill	☐ Melissa Robinson
☐ Shaun Caldwell	☐ Dr. Peter Hu	☐ Mayank Amin
☐ Dr. Mahsa Dehghanpour	☐ Dr. William Undie	☐ Catherine Evans
☐ Dr. Jamie Baker	☐ Clara Fowler	☐ Aziz Benamar
	☐ Helene Phu	☐ Mamie Ilboudo

Agenda topics

5-MINUTES — APPROVAL MEETING MINUTES — MEMBER NAME

TOPIC QEP 2021 INSITUTIONAL EFFECTIVENESS PROGRAM REVIEW SUMMARIES

35 MINUTES

1) Clinical Laboratory Sciences
2) Cytogenetic Technology
3) Diagnostic Imaging
4) Histotechnology
5) Medical Dosimetry
6) Molecular Genetic Technology
7) Radiation Therapy

SHP PROGRAM DIRECTORS

DISCUSSION

DISCUSSION
Student Strengths
Program Strengths
Future Program Development
QEP Topic(s)

30 MINUTES — DR. DAVID FORD

DISCUSSION

30 MINUTES — STUDENT SURVEY — DR. REY TREVINO

DISCUSSION

5 MINUTES — OPEN DISCUSSION

DISCUSSION

THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Making Cancer History®

Steering Committee

AGENDA DATE 11/14/18 TIME 11:30-1:30 **LOCATION SHP DEAN'S CONFERENCE**

MEETING CALLED BY Dr. David Ford

TYPE OF MEETING Steering Committee

NOTE TAKER Sheeba Cruz

ATTENDEES

- ☐ Chair Dr. David Ford
- ☐ Mark Bailey
- ☐ Dr. Masha Dehghanpour
- ☐ Dr. Jamie Baker
- ☐ Dr. Brandy Greenhill
- ☐ Dr. Jun Gu
- ☐ Dr. Peter Hu
- ☐ Dr. William Undie
- ☐ Dr. Dyaz Godfrey
- ☐ Dr. Rey Trevino
- ☐ Helene Phu
- ☐ Clara Fowler
- ☐ Melissa Robinson
- ☐ Mayank Amin
- ☐ Catherine Evans
- ☐ Aziz Benamar

Agenda topics

5 MINUTES — APPROVAL MEETING MINUTES — DR. FORD

Motion: To approve the minutes of September 12, 2018 as circulated
Motion By: Aziz Benamar
Seconded By: Dr. Brandy Greenhill
Motion Carried

Dr. Ford provided a brief summary of the last meeting: QEP components, overview of plan, benchmarks, process, what to expect.

Today's goal: focus on information we have, moving forward to spring 2019, discuss possible topics, literature review of these topics

A binder will be provided at each meeting to each committee member, to be used as needed for reference.

The graphic on the front of binder serves as reminder that QEP is evaluated on five main areas: Process, Plan, Institutional Capability, Involvement, Assessment. All actions at each meeting will directly correlate to one or more of these themes.

Introduction of new members:
Dr. Dyaz Godfrey, Associate Director for Academic & Student Affairs (SHP)
Dr. Rey Trevino, Program Coordinator (SHP)

15 MINUTES — SUBCOMMITTEE UPDATES — DR. FORD

1) COMMUNICATIONS
2) RESEARCH (INTRODUCTION OF TEAM)

Primary Communication representative will be Menatallah El Sharkawi, who will spend 20% of her time supporting QEP.

Purpose of QEP communications plan was discussed and an example of the previous plan was provided. Once QEP topic is identified (approx. summer 2019), we will ensure institution-wide awareness via various electronic communications, promotional events, meetings, posters, etc. Even though this QEP will be focused on the School of Health Professions, the QEP is an *institutional* component of an *institutional* accreditation. Graduate School of Biomedical Sciences representatives Dr. Bill Mattox and Eric Swindoll have been invited to QEP. Communications will also reflect our ongoing arrangement with GSBS.

Research subcommittee will be chaired by Clara Fowler. Helene Phu and Larissa Gann will also be participating in the group. Once a topic has been identified, the subcommittee will follow a systematic process to identify the relevant literature. Some suggested topics thus far: competency-based education, interprofessional education.

DISCUSSION

Dr. Hu inquired about budget for QEP. Per Dr. Ford, it will be discussed in fall 2019 or spring 2020. More research is needed to determine whether proposal will come from SHP.

Dr. Hu gave provided an example of from the Interdisciplinary Case Study that SHP had conducted for five consecutive years. A disease was identified, then each program would contribute their diagnostic and/or treatment plans, culminating in a joint workshop where students would learn about each other's disciplines. Dr. Hu suggested that this idea could be expanded to the institutional level to include SHP as well as 10+ clinical, imaging and radiologic sciences labs.

Upon request from Mayank Amin, Dr. Hu provided additional specifics regarding the afore-mentioned project. Once a disease was selected, they would discuss which departments would analyze patient sample(s), and explain to students the responsibilities of each participating department. Questions were incorporated pre and post-test so that by the end of the exercise, the students developed an understanding of the patient's experience and awareness of tests administered outside of their own disciplines.

Committee members discussed the benefits, diagnostic and holistic, that could be gained by collaborative decision making amongst various modalities.

15 MINUTES

QEP TRENDS
SACSCOC QEP TOPICS
MEDICAL SCHOOL QEP TOPICS
COMPETENCY BASED EDUCATION
INTERPROFESSIONAL EDUCATION
ETHICS
EDUCATIONAL TECHNOLOGY

DR. FORD

QEP Trends
2010 our QEP focus was critical thinking, utilizing "THINK" model

Dr. Ford explained that SACS is looking for engagement and enthusiasm for the project. Multiple examples of other schools' QEP themes and project titles were provided, including feedback from UTMB Galveston's approved QEP.

DISCUSSION

Inter Professional Education QEP information was distributed by Dr. Ford as shared by Shelly Smith (QEP Director UTMB Galveston) was provided. Helene Phu will look into institutional membership, which would allow 3 MDA representatives to attend.

Interprofessional Education, Research, and Distance Learning are emerging as popular QEP topics.

Following discussion, a reminder from Dr. Ford that the full focus must be on "student learning outcomes".

Dr. Ford indicated the importance of building a case for our selected topic, ensuring that all elements correlate, presenting data analysis or rationale to indicate why this particular topic was chosen.

Assessment measures will be needed to determine effectiveness. Assessment measures will be discussed during July or September 2019 meetings.

15 MINUTES

INSTITUTIONAL EFFECTIVENESS

DR. FORD

SHP faculty/staff attended Dr. Gerald Dizinno's presentation on institutional effectiveness.

DISCUSSION

There are 2 parts to the accreditation report.

1) Reflective – review of collected data, proof of activities (documentation is required)
2) QEP – future-focused, how will data be used

15 MINUTES **SURVEY** **DR. FORD**

Dr. Ford provided an institutional effectiveness analysis program summary for each program to complete. Each program will present their institutional effectiveness analysis at the January 16 QEP Steering Committee Meeting. A brief summary of data and trends for each program will also be included in the report.

DISCUSSION

Dr. Ford discussed the upcoming student survey that will be led by Dr. Rey Trevino. The final survey document will be presented at the January 16 QEP Steering Committee meeting and the summary report of findings will be presented by Dr. Trevino at the March 6 QEP Steering Committee. The survey will focus on "team work perceptions and learning" for SHP students. Various survey formats such as NSSE and CERP were considered, but were not timely for our needs. Dr. Ford provided an example of another survey template that will be used as a starting point for an in house survey template. Dr. Trevino would like any input from QEP Steering Committee members by 11 am November 15.

50 MINUTES **PROGRAM DIRECTORS – CLOSED DISCUSSION – INSTITUTIONAL EFFECTIVENESS APPROACH FOR QEP 2021.** **DR. FORD**

DISCUSSION

QEP 2021 Institutional Effectiveness Review Summary

Instructions- The following will serve to document our ongoing review and analysis of institutional effectiveness data to support the development of our 2021 Quality Enhancement Project. Please complete and return by December 14, 2018. This document will be included in our QEP Report.

Program- (check your program)

B.S. Programs

__X___ Clinical Laboratory Sciences
_____ Cytogenetic Technology
_____ Cytotechnology
_____ Diagnostic Imaging
_____ Histotechnology
_____ Medical Dosimetry
_____ Molecular Genetic Technology
_____ Radiation Therapy

M.S. Programs

_____ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- (check the agency that applies to your program)

_____ **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
_____ **Joint Review Committee on Education in Radiologic Technology (JRCERT)**
__X___ **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**

Program Director (initial next to your name)

_____ Mark Bailey
_____ Shaun Caldwell
_____ Dr. Mahsa Dehganpour
_____ Dr. Jun Gu
__X___ Dr. Brandy Greenhill
_____ Dr. Peter Hu
_____ Dr. William Undie

Student Enrollment (indicate the enrollment for each year below)

2018-2019 __27___ students
2017-2018 __25___ students

Data Reviewed (check all that apply)

_X____ Program Self Study
_X____ QEP 2010 Program Summary Report
_X____ Certification Exam Results
_X____ Employer Survey
_X____ Student Course Survey
_X____ Curriculum Committee Meeting Minutes
_X____ Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

- Strong technical skills (Competency checklist/Practical exams/Unknowns)
- Individual BOC scores compared to National average (BOC Score Report)

Current Program strengths (reference reviewed data, bullet points are acceptable)

- Successful pass rate (BOC Report)
- Strong Job Placement Rate (Employment)
- High Graduation and Low attrition rate (Graduation/Attrition Rate)

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

- Faculty development (Special need: CLS has hired new staff that need additional training in Education)
- Increase in molecular application (No referenced data; professional trend)
- Need expansion of clinical sites (required to maintain presence)

QEP project that would benefit your students (select one)

__X___ Interprofessional Education
_____ Competency Based Education
_____ Ethics
_____ Other (please specify)_____

Department: School of Health Professions

Degree Program: BS in Clinical Laboratory Science

Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program:

The mission of the University of Texas MD Anderson Cancer Center is to eliminate cancer in Texas, the nation and the world through outstanding programs that integrate patient care, research and prevention, and through education for undergraduate and graduate students, trainees, professionals, employees and the public.

The University of Texas MD Anderson Cancer Center's Program in Clinical Laboratory Science, in concert with the mission and vision of MD Anderson is committed to the education of technically and academically competent graduates, prepared to meet the immediate and future needs in the Clinical/Medical Laboratory Science professions.

Unit Goals:

- Provide the didactic and clinical instruction necessary for the graduate to:
  - Perform procedures in all areas of the clinical laboratory
  - Integrate and correlate laboratory data
  - Solve problems relating to the production of laboratory results
- Maintain an effective program of student development and learning.
- Ensure an understanding and appreciation for a total quality management program; providing the skills necessary to establish quality control measures and makes appropriate decisions to maintain accuracy and precision.
- Meet the future needs of the Clinical Laboratory Science profession by including state-of-the-art procedures and instrumentation.
- Develop the framework of the graduate to maintain and grow in professional competence throughout his lifetime by promoting participation in continuing education activities of the laboratory, MDACC, and the community
- Communicate the necessity of obeying a professional code of conduct toward patients, visitors, and all health care professionals and to demonstrate the highest regard for human dignity and life.

Student Learning Outcomes
Program Name: Clinical Laboratory Science

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	**Technical Skills:** The student will evaluate and calculate quality control statistics to assess accuracy, reproducibility, and validity of current laboratory methods	• CL 4400: Quality Control Study Guide Study Guide requires students to utilize theoretical knowledge to appropriately calculate statistics and interpret statistical data in reference to laboratory methodology.	13/14 students scored well above the 75% cutoff. 1 student scored below 75%	Students will correctly perform analysis 75%* or better. *75% is based on professional standard for passing professional certification exam.	Results of individual and group performances analyzed and modifications made based on these data. Quality Control Exercises I and II will be developed and administered to next cohort to enhance theory and application.

Outcome 2	**Technical Skills:** The student will perform specialized automated, semi-automated and manual laboratory techniques.	• CL 4530 Clinical Rotation Competency Checklists: Analyzers • CL 4321 Microbiology Competency Checklist: Microbiology Instrumentation, Stains/Wet Preps/Cultures • CL 4332 IMH Competency Checklist: Analysis and Interpretation These areas include: start-up/shutdown of instrument, analysis of specimen acceptability, proper operation of analyzers, performing stains, and Type and Screens per Standard Operating Procedure (SOP).	Majority of the students demonstrated acceptable performances, are careful, and showed adequate attention to detail with minimal supervision. All students achieved 75% or better in clinical rotations. CL 4530 all areas scored above 90% in the Strong & Excellent Level. CL 4332 all areas scored greater than 90% at the Excellent Entry Level. Areas of improvement include antibody screen and identification interpretations. CL 4321 scored greater than 90% at the Strong or Excellent Entry Level. Areas for improvement include start-up and shutdown procedures, staining techniques and biochemical testing.	Students will correctly perform analysis 75%* or better. Students were evaluated on entry-level skills: **Excellent Entry Level=** Student demonstrates an entry level technologist performance by satisfactorily completing the most tasks/processes with only minimum or non-direct supervision by the student's mentor/trainer. The mentor does not need to remind the student how to complete tasks. **Strong Entry Level** = Student The student demonstrates an entry level technologist performance by satisfactorily completing the some tasks with minimum supervision and some with direct supervision of the student's mentor/trainer. The mentor rarely needs to remind the student how to complete tasks. **Adequate Entry Level skills:** Student demonstrates entry level performance by satisfactorily completing the task/process but requires direct, maximum supervision of the student's mentor/trainer. The mentor occasionally needs to remind the student how to complete tasks. **Needs Improvement:** Student demonstrates a basic level performance by satisfactorily completing only few tasks with minimum supervision but usually direct supervision is required by the student's mentor/trainer with most tasks. The mentor frequently needs to remind the student how to complete tasks. **Explanation required for this rating.** **Poor Entry level skills:** Student does not demonstrates basic entry level performance completing the task/process even with direct, maximum supervision of the student's mentor/trainer. The mentor must constantly remind the student how to complete task. **Explanation required for this rating.** *NA and Discuss/Demo do not count against score	Results of individual and group performances analyzed and modifications made based on these data. CL 4332 IMH: Additional practice days will be added into Spring 2019 to improve technique and confidence in testing. CL 4321 Micro: Prelab sessions will be added into Spring 2019 so students can practice streaking samples for isolation. As mentioned, additional labs will be added to work on unknown samples to enhance technique, biochemical analysis and identification.

Outcome 3	**Analytical Skills:** The student will select the appropriate quality control procedures for monitoring laboratory testing.	• CL 4530 Clinical Rotation Competency Checklists: Quality Control; Troubleshooting • CL 4321 Microbiology Competency Checklist: Quality Control • CL 4332 IMH Competency Checklist: Quality Control These areas include: performance and interpretation of Quality Control methods per SOP. This area is critical to all clinical rotations.	Majority of the students demonstrated acceptable performances, are careful, and showed adequate attention to detail with minimal supervision. All students achieved 75% or better in clinical rotations. CL 4530 all areas scored above 90% in the Strong & Excellent Level. Areas of improvement: QC in UA CL 4332 all areas scored greater than 90% at the Excellent Entry Level. CL 4321 scored greater than 90% at the Strong or Excellent Entry Level.	Students will correctly perform analysis 75% or better per grading rubric. Students were evaluated on entry-level skills based on following rubric descriptions: **Excellent Entry Level**= Student demonstrates an entry level technologist performance by satisfactorily completing the most tasks/processes with only minimum or non-direct supervision by the student's mentor/trainer. The mentor does not need to remind the student how to complete tasks. **Strong Entry Level** = Student The student demonstrates an entry level technologist performance by satisfactorily completing the some tasks with minimum supervision and some with direct supervision of the student's mentor/trainer. The mentor rarely needs to remind the student how to complete tasks. **Adequate Entry Level skills:** Student demonstrates entry level performance by satisfactorily completing the task/process but requires direct, maximum supervision of the student's mentor/trainer. The mentor occasionally needs to remind the student how to complete tasks. **Needs Improvement:** Student demonstrates a basic level performance by satisfactorily completing only few tasks with minimum supervision but usually direct supervision is required by the student's mentor/trainer with most tasks. The mentor frequently needs to remind the student how to complete tasks. **Explanation required for this rating.** **Poor Entry level skills:** Student does not demonstrates basic entry level performance completing the task/process even with direct, maximum supervision of the student's mentor/trainer. The mentor must constantly remind the student how to complete task. **Explanation required for this rating.** *NA and Discuss/Demo do not count against score	Results of individual and group performances analyzed and modifications made based on these data. Overall, student achievement is successful. Add UA quality control lab activity in CL 4200 for Fall 2019. Add plate and biochemical lab exercise in CL 4321 for additional practice in QC organism selection in Spring 2019. Concern: Some areas did not cover QC at all. This issue is a discussion point for the Clinical Affiliate meeting in Spring 2019 as well as the CLS Advisory Committee meeting in Summer 2019.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 4	**Analytical Skills:** The student will correlate clinical laboratory testing data with potential disease states.	• CL 4200 Core Techniques Laboratory: Unknowns; Unit Practical Exams • CL 4231IMH Lab: Practical Exam • CL 4210 Microbiology Lab: Practical Exam Practical exams require to obtain, analyze and relate laboratory results to specific diseases.	14/14 students scored above 90% on CL 4200 Core Techniques 9/14 students scored above 90% on CL 4231 Practical Exam 4/14 scored between 80-90% 1/14 narrowly scored the 75% • Student was required to review responses and discuss with Instructor 7/14 students scored above 90% on CL 4231 Practical Exam 6/14 scored between 80-90% 1/14 narrowly scored the 75% • Student was required to review responses and discuss with Instructor	Students will correctly perform analysis 75% or better. *75% based on professional standard	Results of individual and group performances analyzed and modifications made based on these data. After reviewing results of practical exams in CL 4231 and CL 4210, it was determined to add one additional laboratory day to practice all skills by working up unknown samples. This will be implemented in Spring 2019

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 5	**Professionalism:** The student will demonstrate a sense of professionalism and desire to learn.	• CL 4530 Clinical Rotation Competency Checklists: Affective Domain • CL 4321 Microbiology Competency Checklist: Affective Domain • CL 4332 IMH Competency Checklist: Affective Domain These areas include: timeliness, alert and attentive. Asks relevant questions and seeks additional information. Follow through with problems. Performs routine assigned tasks and completes required assignments through daily and course objectives. Works well independently and in groups. Admits to errors or mistakes when made and recognizes limitations. Accepts and applies constructive criticism when confronted. Communicates professionally with other classmates and maintains work quality and quantity.	Majority of the students demonstrated acceptable affective skills, on-time, prepared, alert and communicates well. Two areas that were less than 95% included "Seeks unsolicited tasks and helps others as time permits. When asked, works well as a team member" and "Displays confidence after instruction"	Students will correctly perform analysis 75% or better per grading rubric. Students were evaluated on entry-level skills based on following rubric descriptions: **Always:** The student demonstrate this professional skill and does not need to be reminded to do so. **Frequently:** The student demonstrates this professional skill most of the time and only occasionally needs to be reminded to do so. **Sometime:** The student demonstrates this professional skill some of the time and must be constantly reminded to do so. **Requires explanation from mentor/trainer.** **Never:** the student does not demonstrate this professional skill. **Requires explanation from mentor/trainer. Notify the Program Director (713-563-3091) immediately if a student is not behaving in a professional manner**	Results of individual and group performances analyzed and modifications made based on these data. By adding additional lab days to work on unknowns, students may develop more confidence in their decision-making when handling samples in rotation. Additional lab days have been implemented for Spring 2019 Micro and Blood Bank labs.

Student/Charactercteristic	CL 4530: Chemistry	CL 4530: UA	CL 4530: Hematology	CL 4530: Hemostasis	CL 4332 IMH	CL 4321 Micro	Total	%
Perform and document daily and weekly quality control procedures								
Excellent	11	8	14	11	12	10	11.00	78.57
Strong				2		1	2.00	14.29
Adequate	1							
Needs Improvement								
Poor								
Discuss/Demo*	2	5		1	2	1		
NA*		1				2		
Evaluate quality control results								
Excellent	12	11	13	13	12	11	12.00	85.71
Strong		1	1	1		2	1.25	8.93
Adequate	1							
Needs Improvement								
Poor								
Discuss/Demo	1	2			2	1		
NA						1		

* Does not count against skill; not all labs allow for complete shutdown of instruments

QEP 2021 Institutional Effectiveness Review Summary

Instructions- The following will serve to document our ongoing review and analysis of institutional effectiveness data to support the development of our 2021 Quality Enhancement Project. Please complete and return by December 14, 2018. This document will be included in our QEP Report.

Program- (check your program)

B.S. Programs

_____ Clinical Laboratory Sciences
__X__ Cytogenetic Technology
_____ Cytotechnology
_____ Diagnostic Imaging
_____ Histotechnology
_____ Medical Dosimetry
_____ Molecular Genetic Technology
_____ Radiation Therapy

M.S. Programs

_____ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- (check the agency that applies to your program)

_____ **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
_____ **Joint Review Committee on Education in Radiologic Technology (JRCERT)**
__X__ **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**

Program Director (initial next to your name)

_____ Mark Bailey
_____ Shaun Caldwell
_____ Dr. Mahsa Dehganpour
__X__ Dr. Jun Gu
_____ Dr. Brandy Greenhill
_____ Dr. Peter Hu
_____ Dr. William Undie

Student Enrollment (indicate the enrollment for each year below)

2018-2019 __34__ students
2017-2018 __28__ students

Data Reviewed (check all that apply)

__X___ Program Self Study
__X___ QEP 2010 Program Summary Report
__X___ Certification Exam Results
__X___ Employer Survey
__X___ Student Course Survey
__X___ Curriculum Committee Meeting Minutes
__X___ Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

- Highest score record keeper for ASCP-BOC exam in Cytogenetics.
- Diverse student groups each year.
- High competence in professional skills.
-

Current Program strengths (reference reviewed data, bullet points are acceptable)

- Significant higher average ASCP-BOC exam score compared to national mean each year.
- Well beyond NAACLS required outcome measurement bench mark (graduation rate, board passing rate, and employment rate)
- Resources to teach most advanced techniques in the profession.
- Quality of the program faculty.
- Online track with concentrated in-person lab.
- Training on clinical test validations and research methods.

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

- Inter-professional Education (IPE).
- Online track expansion.
- Faculty development.
- Clinical site expansion.
- Continue upgrade of old imaging systems for teaching.
- Graduate degree (mater of sciences in cytogenetics) track.

QEP project that would benefit your students (select **one**)

_____ Interprofessional Education
__X___ Competency Based Education
_____ Ethics
_____ Other (please specify)_____

Department: Cytogenetic Technology

Degree Program: BS in Cytogenetic Technology

Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission: To provide the highest quality of didactic and technologically advanced clinical education in Cytogenetic Technology graduating professional practitioners that are valued by cytogenetic diagnostic employers, display precision and accuracy in performing cytogenetic techniques and other related assessment skills, and remain active in the professional community and learning throughout their careers.

Vision: We shall be the premier educational program in Cytogenetic Technology by providing innovative curricular, clinical and continuing education services to the University of Texas M.D. Anderson Cancer Center, the state of Texas, and the world.

Goals:

Programmatic goals include obtaining a selection of both diverse student and faculty educational and experiential backgrounds to foster increased interdisciplinary understanding of Cytogenetics and to graduate students with a bachelor degree in Cytogenetic technology.

Program Accreditation: This curriculum conforms to the standards published and monitored by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and technical experience.

Student Learning Outcomes
Program Name: Cytogenetic Technology

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	Professionalism (Personal Skills) during clinical rotations with respect to timeliness	Clinical Rotation Student Evaluation forms in CC4521 Clinical Rotation I course and CC4531 Clinical Rotation II course Narrative: Students are taught professionalism throughout the curriculum in various courses including: CC4530 Basic Cytogenetic Lab Techniques CC4512 Prenatal Cytogenetics CC4390 Advanced Topics in Cytogenetics These areas include: timeliness, alert and attentive. Asks relevant questions and seeks additional information. Follow through with problems. Performs routine assigned tasks and completes required assignments through daily and course objectives. Works well independently and in groups. Admits to errors or mistakes when made and recognizes limitations. Accepts and applies constructive criticism when confronted. Communicates professionally with other classmates and maintains work quality and quantity.	Majority of the students demonstrated acceptable performances, are careful, and showed adequate attention to detail with minimal supervision. Approximately 30% of the students rarely required assistance with evaluation of situations and solutions.	Students were evaluated on a 5 point scale with: 1 = Student demonstrates difficulty grasping important functions and tasks in the clinical laboratory. 2 = Student functions inconsistently in the clinical laboratory, with consistent and detailed instruction required achieving acceptable performances. 3 = Student demonstrates acceptable performances with supervision. Requires assistance with evaluation of situations and solutions. 4 = Student demonstrates performance, is careful, and shows adequate attention to detail. Requires minimal supervision. 5 = Student demonstrate performance with above average level of skill. Rarely requires assistance with evaluation of situations and solutions.	Results of individual and group performances analyzed and modifications made based on these data. For example, pre rotation session with the Program Director on Professional Etiquettes for the 2018-19 cohort.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 2	Perform G-banded chromosome analysis, FISH, and aCGH test	Exams, quizzes, competency tests, speed mapping throughout the program. Students are taught basic G-banded chromosome identification throughout the curriculum in various courses including: • CC4120 Introduction to G-band Karyotyping • CC4530 Basic Cytogenetic Lab Techniques • CC4250 Clinical Cytogenetics • CC4151L Clinical Cytogenetics Lab • CC4152 Prenatal Cytogenetics Students are taught intermediate G-banded abnormal chromosome identification throughout the curriculum in various courses including: • CC4240 Advanced Cytogenetic Lab Techniques • CC4390 Advanced Topics of Cytogenetics • CC4320 Special Topics of Genetics Methods used including: • KaryoTutor chromosome identification instruction and practice • Digital chromosome mapping on Canvas • Speed mapping case series • Abnormalities identification on Canvas • Abnormalities identification on mock exam • Microscope mapping FISH quantitation assignment and case studies • aCGH workshop software analysis • Clinical rotations	80% of the students demonstrated acceptable performance on chromosome identification. 20% of the students who originally showed unacceptable performance improved through remediation	• Pass CC4120 with a grade of 75% or better • Complete all 4 blocks of practice cases on KaryoTutor with 100% accuracy • Pass speed mapping competency test by mapping out a metaphase with 90% of accuracy • Certificate of completion for attending Agilent aCGH workshop • Pass digital mapping assignment with a grade of 75% or better • Pass FISH counting competency test with a grade of 75% or better • Pass chromosome identification mock exam with a grade of 75% or better • Pass abnormal chromosome mapping quiz with a grade of 75% or better	The results were reviewed at the end of the academic year within program and advisory meeting for the effectiveness of each individual method and assessment. Adjustment made and implemented from the beginning of the next cycle.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 3	Research	Evaluation from CC4280 Independent Research Project I and CC4181 Independent Research Project II Students are taught research methods such as plagiarism training, literature search, hypothesis development, research proposal outline development, research proposal writing, study design, data collection, and data analysis. Methods used: • Plagiarism training certificate of completion • Literature search practice and assignment • Group research proposal presentation • Group research project and data collection • Research project result presentation • Course evaluation	All students demonstrated acceptance performance on CC4280 and CC4181 assessment Course evaluation from students was positive	Students were evaluated on a 5 point scale for the following aspects: • Write abstract conforms to APA format and contains appropriate summary statements regarding the purpose, method and expected results • Summarize relevant research from literature, with theory clearly stated and logical, in APA format • Design a study with precise statement of variables and operational definitions • Conduct a study with data collection to test hypothesis • Analyze data using appropriate statistical methods and discuss relevant findings • Appropriate citation and reference conformed to APA format	The results were reviewed at the end of the academic year within program and advisory meeting for the effectiveness of each individual method and assessment. Adjustment made and implemented from the beginning of the next cycle.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 4	Recognize and apply principles of laboratory safety	Instruction in appropriate specimen collection, transport and storage conditions for each specimen type and testing modality following safety rules throughout the curriculum in various courses including: • CC4530 Basic Cytogenetic Lab Techniques • CC4250 Clinical Cytogenetics • CC4151L Clinical Cytogenetics Lab • CC4152 Prenatal Cytogenetics Methods used including: • Lab safety lab practice and competency testing • MD Anderson annual lab safety training online course • Mock CAP inspection using general lab practice checklist • Safety assessment/evaluation through CC4521 and CC4531 rotation courses	80% of the students passed safety competency test with their first attempt 100% of the students completed online MD Anderson Lab Safety training course and submitted certificate of completion All students satisfied rotation safety requirement at all clinical sites	Students were evaluated on a 5 point scale for the following aspects: • Knowledge and skills in application of safety and governmental regulations and standards as applied to Cytogenetics • Perform and monitor quality control indicators recognizing factors that affect laboratory safety • Safety issues relevant to receive, accession and evaluate for appropriateness of each specimen type • Working knowledge of safety regulations (reporting fires, exit routes, MSDS book, personal protective equipment, etc.)	Relevant feedback from course evaluations, semester individual student conferences were discussed in the program. Deficiencies and possible corrective actions were brought up to the advisory committee meeting for further discussion and approval. BOC results specific to lab safety sub-content area were reviewed for possible improvement in program instruction

Outcome 5	Ability to integrate and interpret analytical data, identify errors, and solve problems	Didactic and laboratory instruction throughout the fall and spring semesters with emphasis on error-identification and trouble-shooting. • Competency testing • QEP posttests • Case studies • Class discussion • Student bowl contest • Pre-rotation competency testing Learning experience throughout clinical rotations with practice on clinical teaching cases and assessment on the following: • Case accessioning and processing • Clerical error identification and handling • Weekly abnormality identification competency test on Canvas • Case analysis evaluation • Band level assessment • ISCN preparation • Report preparation Comprehensive final exams were given at the end of each rotation to test student competency in these areas	90% of the students demonstrated ability to integrate and interpret analytical data, identify errors, and solve problems 10% of the students who originally had unsatisfactory performance improved after remediation All students met expectation at the end of their clinical rotations and the conclusion of the program	Students were evaluated on a 5 point scale for the following aspects: **PERSONAL SKILLS** • Arrives at the assigned time prepared for the day's assignment. Informs instructor when leaving the area • Is alert and attentive. Asks relevant questions. Seeks additional information. Follows through with problems • Performs routine assigned tasks and completes required assignments (i.e., objectives) • Works as a team member. Seeks unsolicited tasks and helps others as time permits • Admits to errors or mistakes when made and recognizes limitations. Accepts and applies constructive criticism when confronted • Displays confidence after instruction • Communicates professionally with other healthcare personnel • Maintains work quality and quantity **TECHNICAL SKILLS** • Assesses specimen integrity • Describes the theory and principle of the test methodology and/or instrument • Performs appropriate tests with ability and accuracy of results • Able to operate instrumentation, troubleshoot, and document preventative maintenance as necessary • Correctly performs appropriate manual procedures, if necessary • Applies knowledge of testing limitations and selects appropriate corrective action for out of limit situations • Organizes workflow to make efficient use of time and materials • Maintains required documents for regulatory compliance	Student performance evaluations were used to identify weak students for remediation Students with unsatisfactory performance were given extra practice and tutor sessions during fall and spring semester All students passed pre-rotation competency test before clinical rotations

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
				• Understands and performs Quality Control procedures **REPORTING RESULTS** • Results are accurate and legible • Differentiates between appropriate and inappropriate results • Recognizes normal, abnormal and critical values • Operates LIS to accurately verify results **GENERAL POLICY AND SAFETY PROCEDURE COMPLIANCE** • Possesses working knowledge and acceptance of Hospital and Division policy (dress code, name badges, patient right to privacy)	

QEP 2021 Institutional Effectiveness Review Summary

Instructions- The following will serve to document our ongoing review and analysis of institutional effectiveness data to support the development of our 2021 Quality Enhancement Project. Please complete and return by December 14, 2018. This document will be included in our QEP Report.

Program- (check your program)

B.S. Programs

_____ Clinical Laboratory Sciences
_____ Cytogenetic Technology
_____ Cytotechnology
__X___ Diagnostic Imaging
_____ Histotechnology
_____ Medical Dosimetry
_____ Molecular Genetic Technology
_____ Radiation Therapy

M.S. Programs

_____ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- (check the agency that applies to your program)

_____ **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
__X___ **Joint Review Committee on Education in Radiologic Technology (JRCERT)**
_____ **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**

Program Director (initial next to your name)

_____ Mark Bailey
_____ Shaun Caldwell
_____ Dr. Mahsa Dehganpour
_____ Dr. Jun Gu
_____ Dr. Brandy Greenhill
_____ Dr. Peter Hu
__WU___ Dr. William Undie

Student Enrollment (indicate the enrollment for each year below)

2018-2019 ___48 students
2017-2018 ___42 students

Data Reviewed (check all that apply)

_X____ Program Self Study
_____ QEP 2010 Program Summary Report
_X___ Certification Exam Results
_X___ Employer Survey
_X____ Student Course Survey
_____ Curriculum Committee Meeting Minutes
_____ Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

Image critique abilities
Manipulating the C-Aim Machine
Familiarity with APA style
Professional behavior
Educational advance

Current Program strengths (reference reviewed data, bullet points are acceptable)

Graduation rate
Retention rate
Job placement rate
Admission
Faculty to student ratio

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

Professional development- presentation at the state and local conferences
Writing skills- Thesis and Project Mentoring
IPE
Distance Learning

QEP project that would benefit your students (select **one**)

__X___ Interprofessional Education
_____ Competency Based Education
_____ Ethics
_____ Other (please specify)_____

Department: Diagnostic Imaging-- Radiography

Degree Program: BS in Diagnostic Imaging

Cycle Dates: 8/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission

The mission of the Diagnostic Imaging Program is to provide the highest quality of education to diagnostic imaging students through formal didactic and state-of-the-art clinical experiences that prepare our students to be diagnostic imaging professionals who are patient care focused, critical thinkers and engaged in lifelong learning

Vision

We shall be the premier educational program in Diagnostic Imaging by providing innovative curricular, clinical and continuing education services to the diagnostic imaging community and the patients we serve.

Goals

Fulfillment of the program's mission is assessed by the program's effectiveness and the degree to which the program achieves the goals in which our students will academically and professionally:

- Students will develop patient care focus by providing superior patient care.
- Students will demonstrate critical thinking skills in the clinical environment.
- Students will adopt a philosophy of life-long learning through continuing education
- Students will embrace the MD Anderson core values of caring, integrity, and discovery.
- Students will communicate effectively in a variety of settings.

Program Accreditation: This curriculum conforms to the standards published and monitored by the Joint Review Committee on Education in Radiologic Technology During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and clinical rotation exp

Student Leaning Outcomes (SLO)
Program Name: Diagnostic Imaging Program – Radiography

	Outcome	Assessment Method	Results	Criteria	How results were used to seel improvement
Outcome 1	Patient care Skills (Demonstrate caring and empathy)	Clinical Rotation Student **Competency** Evaluation form DI 2262 Clinical Education II Student **Performance** Evaluation form DI 2262 Clinical Education II Narrative: The student's level of empathy influences patient satisfaction and compliance. Question Item: The student acknowledges the patient and introduces himself/herself to the patient, identifies the correct patient using 2 identifiers, obtains the history prior to the examination	For competency evaluation, all (22) students received a score of 3.0 out of 4. For questions #6 (acknowledges the patient and introduces himself/herself..), students received an average score of 3.8 out of 4. Six out of 22 (27%) students did not receive a score of 4, but majority scored above the score of 3.0 For performance evaluation, all (22) students received a score of 3.0 out of 4. For questions #3, students had an average score of 3.92 out of 4.0. Two out of 22 (0.09%) students didn't receive a score of 4, but majority of students received perfect score on this item.	Students were evaluated on a 4-point scale with: 100% (4) Superior patient care skills 88% (3) Good patient care skills 75% (2) Fair patient care skills 0% (1) Inadequate patient care skills 80% of students will achieve a score of 3 or higher	We plan to modify pedagogy in DI 2221 Patient Care in Radiologic Sciences to emphasize empathy activities. More class time is being devoted to students performing practical techniques during lab simulation and clinical orientation activities Clinical instructors work with students in small groups to aid in concept integration

	Outcome	Assessment Method	Results	Criteria	How results were used to seel improvement
Outcome 2	The students will be able to demonstrate judicious use of ionizing radiation	Student **Competency** Evaluation form DI 2262 Clinical Education II Question item: Chooses technical factors that provide minimum patient dose Student **Performance** Evaluation form DI 2262 Clinical Education II Question item: Consistently uses radiation protection measures **Narrative:** Inadequate patient shielding during radiography can contribute to increased patient dose. For radiologic technologists, shielding is particularly important to protect anatomic areas of the patient near the exposure field, but should not interfere with obtaining diagnostic information.	On the competency evaluation, all students scored above the requirement level of 88% 20 out of 22 students received perfect, while 2 scored above 88% On the performance evaluation form, all 22 students received perfect score, indicating they consistently used radiation protection procedures	Students were evaluated on a 4-point scale with: 100% (4) Superior- Consistently uses radiation protection 88% (3) Good- Normally uses radiation protection 75% (2) Occasionally uses radiation protection 0% (1) Seldom uses radiation protection 80% of students will achieve a score of 3 or higher	The clinical faculty will continue to monitor students when they perform procedure: in the clinical setting to ensur they provide appropriate shielding and collimation. Students will also be reminde of this responsibilities during lab and simulation demonstration.
	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 3	Students will display high ethical and professional behavior	Lab Simulation assessment grade: DI 2333 Radiographic Anatomy and Positioning III DI 2245 Clinical Education III Performance evaluation form completed by clinical instructors	94% (21//22) achieved a score of 3 and above on this when performing lab simulation. For clinical education regarding the question on hand washing, all students scored above 3, but only 17 achieved the perfect score of 4	100% (4) Display high ethical and professional behavior all of the time 85% (3) Display high ethical and professional behavior most of the time 80% Occasionally display ethical and professional behavior	Students performed well in achieving this criterion. We will continue to evaluate performance related to this outcome. Demonstrating professional behavior is very important in our profession. We will continue to emphasize this behavior during orientation

		Question Item: Professional behavior Narrative: Students must be dedicated to providing competent, compassionate, and respectful patient care services to all patients, considering each as an individual, regardless of characteristics such as race, national origin, color, religion, gender, sexual orientation, age, disease, or disability; respect the rights of patients including the right to confidentiality, and shall safeguard The student consistently washes hands before and after performing examination procedure on each patient		70% (1) Seldom display ethical and professional behavior	activities, as well as in patient care classes and the clinical setting
	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 4	Demonstrate critical thinking skills in critiquing radiographic images	DI 2263 Clinical Education III DI 2263 Clinical Education IV Narrative: Students are expected to demonstrate the ability of identifying quality images based on several technical factors. Students perform this activity in groups at the end of each semester. Remediation is provided to those students that do poorly, and are retested again.	For Image Critique 1, students received an average score of 86. 17 students received a score of 92 and above 5 students received a sore of 78 and 90 For Image Critique 1I, students received an average score of 92. 19 students received a score of 92 and above 2 students received a sore of 88 and 89.6	80% of students will achieve a score of 3 or higher	Image critiquing skill is very important as students are expected to work independently during their senior year. To improve students' ability to discern good and poor quality images, the clinical faculty will provide more clinical visits to assist students in performing exam procedures, and conduct review sessions during slow times in the clinical setting.

	Outcome	Assessment Method	Results	Criteria	How results were used to see improvement
Outcome 5	The students will be able research and present information using strong oral and written communication skills	Students are assessed on this outcome based on their performance in the class: **HS 3370 Fundamental of writing and critical Thinking (Research Paper and Oral Presentation)** Conduct a literature search to articulate an effective technological approach that has improved diagnostic processes. Slide presentation is organized in logical manner and the students demonstrates evidence of technological advancement of topic Students work on fundamental components of clear and effective writing, the structure of paragraph and essay, grammar and familiarity with proper guidelines APA style.	All students achieved satisfactory scores on both the written and oral components. **Written-Research Paper** 75% (33/44) received a score of 3 or higher; 64% (28/44) received a perfect score **Oral Presentation** The majority of students 38 out of 44 received a score of 3 (40-50) and higher, while 6 received a perfect 4 (50)	80% percent of students will earn a 3 or higher on the writing assignment 4 indicates superior written/oral communication skill, 3 good written/oral communication skill, 2 indicates average written/oral communication skill, 1 indicates poor written/oral communication skill The same scoring rubric applies to oral presentation Originality- New approach, procedure, or technique; educational value to imaging professionals or technologist; contribution to higher standard of radiology work; grammatical construction and mechanics	We are satisfied with the results and will continue to assess student achievemen in the next cycle Starting in January, 2019, the program will organized a scholastic tournament where students can compet and show their work. The faculty will provide individualized feedback regarding the quality and mechanics of the papers and posters to help improve their writing and presentation skills. Students that are successful from this event will be encouraged to submit their work to the state and national contest

Department: Diagnostic Imaging – Computed Tomography

Degree Program: BS in Diagnostic Imaging

Cycle Dates: 8/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission

The mission of the Diagnostic Imaging Program is to provide the highest quality of education to diagnostic imaging students through formal didactic and state-of-the-art clinical experiences that prepare our students to be diagnostic imaging professionals who are patient care focused, critical thinkers and engaged in lifelong learning

Vision

We shall be the premier educational program in Diagnostic Imaging by providing innovative curricular, clinical and continuing education services to the diagnostic imaging community and the patients we serve.

Goals

Fulfillment of the program's mission is assessed by the program's effectiveness and the degree to which the program achieves the goals in which our students will academically and professionally:

- Students should demonstrate superior patient care skills.
- Students should demonstrate complete understanding of cross-sectional anatomy.
- Students should be able to effectively perform procedures of the abdomen with iodinated contrast administration.
- Students should embrace the MD Anderson core values of caring, integrity, and discovery.
- Students should demonstrate critical thinking skills in the clinical environment.

Program Accreditation: This curriculum conforms to the standards published and monitored by the Joint Review Committee on Education in Radiologic Technology During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and clinical rotation experience.

Student Leaning Outcomes (SLO)
Program Name: Diagnostic Imaging Program – Computed Tomography

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	Students should demonstrate superior patient care skills	1. Competency Evaluation Form. Patient Care Section. DI 4393 Clinical Internship I 2. Clinical Performance Evaluation Form. Item 4. DI 4393 Clinical Internship I	1. For Competency Evaluation, all (5) students received a score of 4 out of 4. 2. For Clinical Performance Evaluation, all students scored 3.6 or higher.	Students are evaluated using the Competency Evaluation and the Clinical Performance Evaluation. These rubrics are set on a 4-point scale representing the level of achievement: • 1-Below Expectations • 2-Approaching Expectations • 3-Meeting Expectations • 4-Exceeding Expectations 80% of students should attain a composite score of 80/100. No more than 20% of the students should score below the achievement level of 3 on any individual category.	Teaching was modified and applied to emphasize patient safety, screening, and education in the Patient Care class DI 4394 Internship II. More class time was devoted to students performing practical techniques during lab simulation and in clinical settings.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 2	Students should demonstrate complete understanding of cross-sectional anatomy	1. Pre-Test (Mock 1) and Post-Test (Mock 2). DI 4357 CT Comprehensive Review 2. Competency Evaluation Form. Image Evaluation Section.	1. Pre-Test and Post-Test: 1.1 Pre-Test: Questions used for this assessment plan included question numbers: 10, 28, 31, 44, and 50. Four out of five students (80%) answered all five	1. A total number of five cross-sectional anatomy questions are selected for both Pre-Test and Post-Test. Students should be able to answer 4 out of 5 cross-sectional anatomy questions on both tests.	During DI 4357 CT Comprehensive Review class, extensive review of cross-sectional anatomy was completed. An exam was provided at the end of each section review to assess progress.

		DI 4394 Clinical Internship II	cross-sectional anatomy questions correctly. 1.2 Post-Test: Questions used of this assessment plan included question numbers: 35, 40, 41, 49, and 68. Four out of five students (80%) answered all five cross-sectional anatomy questions correctly 2. For Competency Evaluations performed during Clinical Internship II, 4 out of 5 students received an average score of 4 out of 4 in the Image Evaluation Section. 1 student completed all CT Competencies in the Fall Semester.	2. Students are evaluated using the Competency Evaluation. This rubric is set on a 4-point scale representing the level of achievement: • 1-Below Expectations • 2-Approaching Expectations • 3-Meeting Expectations • 4-Exceeding Expectations 80% of students should attain a composite score of 80/100. No more than 20% of the students should score below the achievement level of 3 on any individual category.	
	Outcome	**Assessment Method**	**Results**	**Criteria**	**How results were used to seek improvement**
Outcome 3	Students should be able to effectively perform procedures of the abdomen with iodinated contrast administration	1. Abdomen with Contrast Administration Competency Evaluation Form. Procedure Performance Section 2. Clinical Performance Evaluation. Item Number 7. DI 4394 Clinical Internship II	1. For the Competency Evaluation of the Abdomen with Iodinated Contrast Administration, 4 out of 5 students scored 4 out of 4. 1 student scored 3 out of 4. 2. For the Clinical Performance Evaluation, 3 out of 4 students scored 4 out of 4. For 2 students, data were not recorded electronically due to	Students are evaluated using the Competency Evaluation and the Clinical Performance Evaluation. These rubrics are set on a 4-point scale representing the level of achievement: • 1-Below Expectations • 2-Approaching Expectations • 3-Meeting Expectations • 4-Exceeding Expectations	Cross-sectional anatomy and procedures of the abdomen were reviewed during DI 4357 CT Comprehensive Review. In addition, physical properties and considerations of iodinated contrast materials were reviewed and reassessed.

			their transition to Vascular Interventional Internship	80% of students should attain a composite score of 80/100. No more than 20% of the students should score below the achievement level of 3 on any individual category.	
	Outcome	**Assessment Method**	**Results**	**Criteria**	**How results were used to seek improvement**
Outcome 4	Students should embrace the MD Anderson Core Values of Caring, Integrity, and Discovery	1. Clinical Performance Evaluation. Item 8. DI 4394 Clinical Internship II 2. Clinical Performance Evaluation. Item 9. DI 4394 Clinical Internship II 3. Clinical Performance Evaluation; Item 10. DI 4394 Clinical Internship II	• For the three Core Values evaluated, 2 out of the 5 students scored 4 out of 4 in all five evaluations. • 2 other students scored 4 out of 4 in the first 4 clinical performance evaluations. For these two students, the last clinical performance evaluation was not recorded electronically due to their transition to Vascular Interventional Internship. • 1 student scored 4 out of 4 in the first evaluations provided. For this student, the last two evaluations were not recorded electronically due to the student's transition to Vascular Interventional Internship.	Students are evaluated using the Clinical Performance Evaluation Form items on Caring, Integrity and Discovery (8 – 10 respectively) This rubric is set on a 4-point scale representing the level of achievement: • 1-Below Expectations • 2-Approaching Expectations • 3-Meeting Expectations • 4-Exceeding Expectations 80% of students should attain a composite score of 80/100. No more than 20% of the students should score below the achievement level of 3 on any individual category.	During DI 4355 Special Topics class, students were involved in instructional team building activities that promoted MD Anderson Core Values. In addition, students were presented with different patient care scenarios that allowed them to explore the different ways to respond to difficult cases while maintaining accountability and personal growth.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 5	Students should demonstrate critical thinking skills in the clinical environment	1. Clinical Competency Form with Rubric. Patient Care Section; Item Number 4 DI 4393 Clinical Internship I 2. Clinical Performance Evolution with Rubric; İtem Number 7 DI 4393 Clinical Internship I	1. For the Competency Evaluation, all students scored 3 or above. 2. For the Clinical Performance Evaluation, all students scored 3 or above.	Students are evaluated using the Competency Evaluation and the Clinical Performance Evaluation. These rubrics are set on a 4-point scale representing the level of achievement: • 1-Below Expectations • 2-Approaching Expectations • 3-Meeting Expectations • 4-Exceeding Expectations 80% of students should attain a composite score of 80/100. No more than 20% of the students should score below the achievement level of 3 on any individual category.	In DI 4354 CT Procedures class, students were assigned clinical case studies to present in front of the class. In addition, students worked on CT article reviews in which the students summarized the content and their understanding of the publication. In DI 4353 CT Physics II class, students completed labs and problem-based learning activities directed to perform CT scan protocols followed by group discussions.

Department: Diagnostic Imaging—Magnetic Resonance Imaging

Degree Program: BS in Diagnostic Imaging MRI

Cycle Dates: 8/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission The mission of the Diagnostic Imaging Program Magnetic Resonance Imaging Emphasis is to provide the highest quality of education to magnetic resonance imaging students through formal didactic and state-of-the-art clinical experiences that prepare our students to be magnetic resonance imaging professionals who are patient care focused, critical thinkers and engaged in lifelong learning.

Vision We shall be the premier educational program in Magnetic Resonance Imaging by providing innovative curricular, clinical and continuing education services to the diagnostic imaging community and the patients we serve.

Goals
Fulfillment of the program's mission is assessed by the program's effectiveness and the degree to which the program achieves the goals in which our students will academically and professionally:

- Students will develop patient care focus by providing superior patient care.
- Students will demonstrate critical thinking skills in the clinical environment.
- Students will adopt a philosophy of life-long learning through continuing education
- Students will embrace the MD Anderson core values of caring, integrity, and discovery.
- Students will communicate effectively in a variety of settings.

Program Accreditation: This curriculum conforms to the standards published and monitored by the Joint Review Committee on Education in Radiologic Technology During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and clinical rotation experience.

Student Leaning Outcomes (SLO)
Program Name: Diagnostic Imaging Program – Magnetic Resonance Imaging Emphasis

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	**Patient Care Skills** Students will develop patient care focus by providing superior patient care.	Student Clinical **Competency** Evaluation form – Patient Care Section Item B: Acts professionally and provides appropriate patient care DI 4392 Internship III MRI Student Clinical **Performance** Evaluation form – Item #6: The student establishes good rapport with patients; considerate and responsive to their needs; respective of the patient's rights and preserves patient dignity. DI 4392 Internship III MRI Narrative: The student's level of empathy influences patient satisfaction and compliance. Students are taught to display a high-quality patient care during clinical internships. These behaviors include student's interaction with the patient, ensuring patient safety, and infection control.	For **competency** evaluation, Patient Care Item B, all (10 out of 14. Four students completed their competency requirements in the previous term, and did not have competency evaluations in Summer term.) students received ratings of Meets or Exceeds Expectations. Eight students received ratings of Exceeds Expectations solely. Two students received ratings of Meets and Exceeds Expectations. For **performance** evaluation, Item #6, students received an average score of 3.83 out of 4. One out of 14 (7%) students received a rating of Average Performance. Five out of 14 (35%) received ratings of Above Average Performance. Eight out of 14 (57%) received ratings of Superior Performance.	Student Clinical **Competency** Evaluation form: Students were evaluated on the following scale: 3 Exceeds Expectations 2 Meets Expectations 1 Below Expectations 0 Unacceptable Performance All students will score 2 or higher on Patient Care Item B. Student Clinical **Performance** Evaluation form: 4 Superior Performance 3 Above Average Performance 2 Average Performance 1 Below Average Performance All students will score 3 or higher on Item 6.	Modifications have been made to pedagogy to emphasize Patient Care competencies in DI 4392. Additional lab time is being devoted to students simulating and performing techniques via simulation and practical lab activities through instruction in the Simulation Center.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 2	**Critical Thinking** Students will demonstrate critical thinking skills in the clinical environment.	Student Clinical **Competency** Evaluation form – Image Evaluation section Items D & E d: Evaluate FOV centering and slice alignment? e: Identify artifacts? DI 4392 Internship III MRI Narrative: The student's ability to appropriately evaluate and analyze images impacts accuracy of patient diagnosis. Students are taught image analysis in didactic and clinical internship courses using items a-e listed above.	For **competency** evaluation, Image Evaluation Section Item D, all (10 out of 14. Four students completed their competency requirements in the previous term, and did not have competency evaluations in Summer term.) students received ratings of Meets or Exceeds Expectations. Six students received ratings of Exceeds Expectations solely. Four students received ratings of Meets and Exceeds Expectations. For **competency** evaluation, Image Evaluation Section Item E, all (10 out of 14. Four students completed their competency requirements in the previous term, and did not have competency evaluations in Summer term.) students received ratings of Meets or Exceeds Expectations. Four students received ratings of Exceeds Expectations solely. Six students received ratings	Student Clinical **Competency** Evaluation form: Students were evaluated on the following scale: 3 Exceeds Expectations 2 Meets Expectations 1 Below Expectations 0 Unacceptable Performance All students will score 2 or higher on Image Evaluation Items D & E.	Verbal feedback received by instructional faculty & staff from clinical preceptors and managers has indicated room for improvement of graduate retention of sectional anatomy. Additional assignments to reinforce this knowledge have been added to course content.

			of Meets and Exceeds Expectations.		

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 3	**Professionalism** Students will demonstrate a sense of professionalism and desire to learn.	Student Clinical **Performance** Evaluation form – Item #7: The student demonstrates sound judgment and decisions are based on clear thought processes (Professional Judgment). Students will complete one of the following: 1. Attend a professional conference 2. Submit a Poster or Presentation at an Institution, State, or National Conference 3. Participate as Officers at Society meetings Narrative: The technology used in Magnetic Resonance Imaging is constantly and quickly evolving. Students who participate in professional development activities in the academic career are likely to continue to do so after graduation.	For **performance** evaluation, Item 7, students received an average score of 3.68 out of 4. Three out of 14 (21%) students received a rating of Average Performance. Six out of 14 (43%) received ratings of Above Average Performance. Five out of 14 (36%) received ratings of Superior Performance. Ten of 14 (71%) students participated in a professional conference.	Student Clinical **Performance** Evaluation form: 4 Superior Performance 3 Above Average Performance 2 Average Performance 1 Below Average Performance All students will score 3 or higher on Item 7. All students will participate in one of the following: 1. Attend a professional conference 2. Submit a Poster or Presentation at an Institution, State, or National Conference 3. Participate as Officers at Society meetings	Students now complete modules on Service Recovery, as well as the "Language of Caring" in the institution's Education Center The program has established an annual scholastic tournament to foster students' participation in submitting manuscripts, posters, and presentations to the state professional society annual meeting.
	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 4	**Core Values** Students will embrace the M.D. Anderson core values of caring, integrity and discovery.	Student Clinical **Performance** Evaluation form #13, 14, & 15 Caring, Integrity, Discovery #13: The student consistently demonstrates sensitivity to the concerns of patients and coworkers. (Caring) #14: The student consistently holds self and others accountable for actions; communicates openly and honestly. (Integrity)	For **performance** evaluation, Item 13, students received an average score of 3.82 out of 4. One out of 14 (7%) students received a rating of Average Performance. Seven out of 14 (50%) received ratings of Above Average Performance. Six out of 14 (43%)	Student Clinical **Performance** Evaluation form: 4 Superior Performance 3 Above Average Performance 2 Average Performance 1 Below Average Performance All students will score 3 or higher on Items 13, 14, & 15.	Students now complete modules on Service Recovery, as well as the "Language of Caring" in the institution's Education Center.

		#15: The student consistently helps identify and solve problems; seeks personal growth and enable others to do so. (Discovery) DI 4392 Internship III MRI	received ratings of Superior Performance. For **performance** evaluation, Item 14, students received an average score of 3.68 out of 4. Three out of 14 (21%) students received a rating of Average Performance. Six out of 14 (43%) received ratings of Above Average Performance. Five out of 14 (36%) received ratings of Superior Performance. For **performance** evaluation, Item 15, students received an average score of 3.79 out of 4. Four out of 14 (29%) students received a rating of Average Performance. Five out of 14 (36%) received ratings of Above Average Performance. Five out of 14 (36%) received ratings of Superior Performance.		
	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 5	**Communication** Students will be able to use effective oral communication in the clinical settings.	Student Clinical **Performance** Evaluation form #8: The student demonstrates some understanding of human diversity; attempts to communicate effectively with patients and demonstrates respect	For **performance** evaluation, Item 8, students received an average score of 3.87 out of 4. Six out of 14 (43%) received ratings of Above Average Performance. Eight out	Student Clinical **Performance** Evaluation form: 4 Superior Performance 3 Above Average Performance 2 Average Performance 1 Below Average Performance	Students now complete modules on Service Recovery, as well as the "Language of Caring" in the institution's Education Center.

		Student Clinical **Competency** Evaluation form– Patient Care Section Item C: Educate the patient with regards to the specific MR exam Narrative: An informed patient is a cooperative patient. This serves to improve quality of care, as well as delivery of care in a timely fashion. Resulting in improved patient satisfaction.	of 14 (57%) received ratings of Superior Performance For **competency** evaluation, Patient Care Section Item C, all (10 out of 14. Four students completed their competency requirements in the previous term, and did not have competency evaluations in Summer term.) students received ratings of Meets or Exceeds Expectations. Five students received ratings of Exceeds Expectations solely. Five students received ratings of Meets and Exceeds Expectations.	All students will score 3 or higher on Item 8. Student Clinical **Competency** Evaluation form: Students were evaluated on the following scale: 3 Exceeds Expectations 2 Meets Expectations 1 Below Expectations 0 Unacceptable Performance All students will score 2 or higher on Patient Care Item C.	

Department: UT MD Anderson School of Health Professions, Diagnostic Medical Sonography

Degree Program: Bachelor of Science in Diagnostic Medical Sonography

Cycle Dates: 08//2017 through 7/18

Program Mission Statement and Description of Program:

Mission

The mission of the Diagnostic Medical Sonography Program is to provide the highest quality of education to diagnostic imaging students through formal didactic and state-of-the-art clinical experiences that prepare students to be diagnostic medical sonographers who are focused on patient care, and critical thinkers and are engaged in lifelong learning.

Vision

We shall be the premier educational program in Diagnostic Medical Sonography by providing innovative curricular and clinical education to our students.

Goals

Fulfilment of the program's mission is assessed by the program's effectiveness and the degree to which the program achieves the goals in which our students will academically and professionally:

- Develop a patient care focus by providing superior patient care.
- Successful in meeting the challenges of being a Sonographer.
- Practice Sonography within an ethical and legal framework.
- Use critical thinking to analyze clinical data and current literature as a basis for decision making in Sonography.

Department: UT MD Anderson School of Health Professions, Diagnostic Medical Sonography

Degree Program: Bachelor of Science in Diagnostic Medical Sonography

Cycle Dates: 08//2017 through 7/18

	Outcome	Assessment Method	Result	Criteria	How results were used to seek improvement
Outcome 4	Clinical competence and performance Students are expected to demonstrate a certain level of proficiency as they progress through their clinical education	Diagnostic Sonography DS 3211 Clinical Internship I The clinical preceptor will evaluate the students on ultrasound instrumentation, as well as effective utilization of appropriate measurement controls and analysis software	Semester 2 Spring 2018 12 out of 12 students received a satisfactory evaluation. The evaluation based on scan calcification: - Average - Technically difficult, - Pathology	Criterion assessed using the corresponding performance objective form completed by the clinical staff at the end of each rotation. Evaluation will based on satisfactory/non satisfactory technical skills based on average, technically difficult, or pathology	The program faculty will continues to monitor the students' scan performance by visiting the clinical site to follow up on them. The program has implemented a clinical affiliate evaluation form, this form will allow the students to rate their clinical experience according to clinical activates, clinical environment, and availability of proper equipment.

Department: UT MD Anderson School of Health Professions, Diagnostic Medical Sonography

Degree Program: Bachelor of Science in Diagnostic Medical Sonography

Cycle Dates: 08//2017 through 7/18

	Outcome	Assessment Method	Result	Criteria	How results were used to seek improvement
Outcome 5	**Patient communication and care** Insure the patient information and patient conversation are held in confidence (Compliance with HIPAA regulation)	Diagnostic Sonography DS 3211 Clinical Internship The clinical preceptor's evaluation in the quality proficiency #1 form in The Sonography Clinical Assessment Notebook	Semester 2 Spring 2018 12 out of 12 students received a satisfactory evaluation from the clinical site preceptors	Criterion assessed using the corresponding performance objective form completed by the clinical staff at the end of each rotation. Evaluation will based on satisfactory/non satisfactory patient communication	All student received satisfactory evaluation on their communication and care, however school's instructor will keep advising students in each class and lab on the importance of compliance with HIPPA regulation for patients' safety and privacy

Master of Science in Radiologic Sciences Program
Student Learning Outcomes
2017-2018

Department: Radiologic Sciences
Degree Program: MS Program in Radiologic Sciences
Cycle Dates: 1/2017 through 8/2018

The University of Texas MD Anderson Cancer Center Mission Statement
To eliminate cancer in Texas, the nation, and the world through outstanding programs that integrate patient care, research, and prevention, and through education for undergraduate and graduate students, trainees, professionals, employees, and the public.

School of Health Professions Mission Statement
The School of Health Professions, in concert with the mission and visions of The University of Texas MD Anderson Cancer Center, is committed to the education of health care professionals through formal academic programs that award institutional certificates and degrees in health sciences.

MSRS Program Mission Statement
The Master of Science program in Radiologic Sciences, in concert with the mission and visions of The University of Texas MD Anderson Cancer Center, is committed to the education of technologically and academically outstanding graduates prepared to meet the immediate and future needs of diagnostic and therapeutic services in radiologic sciences.

	Outcome	Assessment Method	Results	Criteria	How Results Were Used to Seek Improvement
Outcome 1	Conduct research specific to radiologic sciences that adds to the body of knowledge.	**Research Proposal in RS 5312** Students complete a research proposal on a current issue or trend in radiologic sciences. The goal of this assignment is to present a rationale for conducting the proposed study as well as providing detailed methodology information. The goal of this assignment is to help students develop a foundation for their potential thesis project. Specifically, the methodology section will be reviewed based on the description of the design, sample selection, instrumentation, data collection and analyses procedures, and ethical considerations.	In 2017, this tool was not used. In 2018, 8 (100%) students scored a 3 or higher; the average score was 3.25. Only 2 (25%) students scored a 4; 6 (75%) students scored a 3. Most of the minor issues involved data collection and analysis procedures.	The methodology section of the research proposal assignment will be assessed using a rubric: 0 – No attempt 1 – Major issues 2 – Moderate issues 3 – Minor issues 4 – No issues 80% of the students will score a 3 or higher on the methodology section of the research proposal.	Because a new instructor was hired for RS 5312 resulting in different instructional methods, this tool was not used in 2017. In 2019, instruction will be enhanced on data analyses procedures to include supplemental online videos on various statistical tests. Specific assignments related to statistics will also be incorporated into the class.
		Survey Development Project in RS 5312 Students create a survey in RS 5312 using Qualtrics specific to a current issue in medical imaging or radiation therapy and receive feedback on the design of the survey (structure, flow, and language). The goal of this	In 2017, this tool was not used. In 2018, 8 (100%) students scored a 3 or higher; the average score was 3.5. Four (50%) students scored a 4; and 4 (50%) students scored a 3. Most of the minor issues involved not making survey items exhaustive or mutually exclusive.	The design of the survey will be assessed using a rubric: 0 – No attempt 1 – Major issues 2 – Moderate issues 3 – Minor issues 4 – No issues	Because a new instructor was hired for RS 5312 resulting in different instructional methods, this tool was not used in 2017. In 2019, instruction on survey design will include making items mutually exclusive and exhaustive and how not doing so results in a flawed methodology.

		assignment is to help students avoid any potential problematic areas with writing survey items for those who are considering survey research for their thesis project.		80% of the students will score a 3 or higher on the design portion (structure, flow, and language) of the survey development project.	

Outcome 2	Use **critical thinking skills** to address issues in radiologic sciences or health care.	**Mission, Vision, and Values Discussion Board in RS 5311** Students write a discussion board post where they ask their peers at work if they are familiar with the organization's mission, vision, and values. Students note their observations, reflect on the organization's ability to instill the mission, vision, and values to the employees, and submit a journal article in support of their position. The quality of the original post will be reviewed based on the students' ability to analyze their peers' responses and support their position with a journal article.	In 2017, 21 (100%) students scored a 3 or higher; the average score was 3.29. Six (29%) students scored a 4; and 15 (71%) students scored a 3. In 2018, 8 (100%) students scored a 3 or higher; the average score was 3.5. Four (50%) students scored a 4; and 4 (50%) students scored a 3.	The discussion board assignment will be assessed using a rubric: 0 – No attempt 1 – Did not meet expectations 2 – Improvement needed 3 – Met expectations 4 – Exceeded expectations 80% of the students will score a 3 or higher on the discussion board assignment demonstrating their ability to analyze observations and support with current literature.	In 2019, it may be beneficial to revise instruction so that students are also responsible for addressing every comment on their original post as well as responding to two of their classmates' posts to see different perspectives.
		Criterion 10: Mentor Internship Evaluation Form in RS 6319 Students work with a mentor to complete an internship experience in the area of radiologic sciences administration or education. The internship experience requires students to complete an intensive project under the direct supervision of the mentor. The mentor evaluates the student's performance at the end of the internship. Criterion 10 asks the mentor to evaluate the student's ability to analyze and determine information needed for the project.	In 2018, 20 (95%) students scored a 3 or higher; the average score was 3.67. One (5%) student, who scored a 0, requested an extension on the internship experience and received an incomplete for the course. Three (14%) students scored a 3, and 17 (81%) students scored a 4.	Criterion 10 on the mentor's evaluation form for the internship experience will be assessed using a rubric: 0 – No attempt 1 – Poor 2 – Average 3 – Good 4 – Excellent 80% of the students will score a 3 or higher on their ability to analyze and determine the information needed for the internship project.	In 2019, feedback from the mentors will be collected to determine if any changes to the criteria are needed on the evaluation form.

Outcome 3	Demonstrate effective **communication skills** in radiologic sciences professional settings.	**PechaKucha (PK) Presentation in RS 5310** Students create a PK presentation on any topic from the course textbook and make implications for medical imaging and radiation therapy. The design of the presentation and audio narration will be reviewed for visual appeal and clarity in speech.	In 2017, this tool was not used. In 2018, 8 (100%) students scored a 4. In addition, course evaluations revealed that the students enjoyed completing the PK assignment; one student mentioned using the PK presentation at work.	The PK presentation, in particular the design and narration, will be assessed using a rubric: 0 – No attempt 1 – Major issues 2 – Moderate issues 3 – Minor issues 4 – No issues 80% of the students will score a 3 or higher on the design and narration of the PK presentation.	Because a new instructor was hired for RS 5310 resulting in different instructional methods, this tool was not used in 2017. In 2019, no changes to this assignment will be made. Feedback from the 2019 cohort will be used to make any suggested modifications.
		Oral Defense Presentation Students must successfully defend their thesis/non-thesis projects during their last semester. The oral defense requires the students to present their research and results and answer all of the questions asked by the graduate committee. If the initial defense is unsuccessful, students are required to schedule a second attempt. If the second attempt is also unsuccessful, students must complete remedial work prior to scheduling the third and final defense attempt. Students are not allowed any additional opportunities after three unsuccessful attempts.	In 2018, 20 (100%) students scored a 4, successfully completing their defense on the first attempt.	The oral defense presentation will be assessed using a rubric: 0 – No attempt 1 – Did not complete on third attempt 2 – Completed on third attempt 3 – Completed on second attempt 4 – Completed on first attempt 80% of the students will score a 3 or higher on the oral defense presentation.	Since all of the students successfully completed their oral defenses on the first attempt in 2018, this process will continue without modifications in 2019 (or until a student is required to complete remedial work prior to the third and final attempt).

Outcome 4	Apply **leadership skills** as an administrator or educator in radiologic sciences or health care to improve practice.	**Criterion 2: Mentor Internship Evaluation Form in RS 6319** Students work with a mentor to complete an internship experience in the area of radiologic sciences administration or education. The internship experience requires students to complete an intensive project under the direct supervision of the mentor. The mentor evaluates the student's performance at the end of the internship. Criterion 2 asks the mentor to evaluate the student's decision making in judgment and setting priorities during the internship experience.	In 2018, 20 (95%) students scored a 3 or higher; the average score was 3.67. One (5%) student, who scored a 0, requested an extension on the internship experience and received an incomplete for the course. Three (14%) students scored a 3, and 17 (81%) students scored a 4.	Criterion 2 on the mentor's evaluation form for the internship experience will be assessed using a rubric: 0 – No attempt 1 – Poor 2 – Average 3 – Good 4 – Excellent 80% of the students will score a 3 or higher on their decision making in judgment and setting priorities during the internship experience.	In 2019, feedback from the mentors will be collected to determine if any changes to the criteria are needed on the evaluation form.
		Criterion 2: Student Internship Evaluation Form in RS 6319 Students complete a self-evaluation form at the end of the internship experience where they completed an intensive project under the direct supervision of a mentor in the area of administration or education. Criterion 2 asks the students if they have a better understanding of concepts, theories, and skills in leadership as a result of completing the internship experience.	In 2018, 20 (95%) students scored a 4 or higher; the average score was 4.67. One (0.05%) student, who scored a 0, requested an extension on the internship experience and received an incomplete for the course. Two (10%) students scored a 4, and 18 (86%) students scored a 5.	Criterion 2 on the student internship evaluation form will be assessed using a rubric: 0 – No attempt 1 – Strongly disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly agree 80% of the students will score a 4 or higher on having a better understanding of concepts, theories, and skills in administrative or educational leadership in radiologic sciences.	In 2019, feedback from the cohort will be used to make any suggested modifications to the internship experience to provide students with improved areas to demonstrate leadership skills in radiologic sciences administration or education.

Outcome 5	Evaluate **ethical and legal standards** in practice as a radiologic sciences administrator or educator.	**Ethics/Legal Scholarly Paper in RS 5313** Students write a scholarly paper related to a legal or ethical issue in health care and discuss how the issue could potentially impact radiologic sciences administrators or educators. Possible solutions must be presented in the paper and be supported with peer-reviewed journal articles.	In 2017, this tool was not used. In 2018, 7 (88%) students scored a 3 or higher; the average score was 3.5. One (13%) student scored a 2; 2 (25%) students scored a 3; and 5 (63%) students scored a 4.	The scholarly paper will be assessed using a rubric: 0 – No attempt 1 – Major issues 2 – Moderate issues 3 – Minor issues 4 – No issues 80% of the students will score a 3 or higher documenting their understanding of ethical or legal issues related to health care and radiologic sciences.	Because a new instructor was hired for RS 5313 resulting in different instructional methods, this tool was not used in 2017. In 2019, a sample paper will be provided to help students develop their ethical or legal issue and to see how to support the information with peer-reviewed literature.
		Case Study Discussion Board in RS 5313 Students read a case study involving multiple legal and ethical issues and submit an original discussion board post where they identify, analyze, and discuss the legal and ethical issues presented. Students are also instructed to consider and incorporate the four principles of ethics discussed in the course readings.	In 2017, this tool was not used. In 2018, 7 (88%) students scored a 3 or higher; the average score was 3.5. One student (13%) scored a 2; 2 (25%) students scored a 3; and 5 (63%) students scored a 4.	The discussion board assignment will be assessed using a rubric: 0 – No attempt 1 – Did not meet expectations 2 – Improvement needed 3 – Met expectations 4 – Exceeded expectations 80% of the students will score a 3 or higher on the case study discussion board assignment demonstrating their knowledge of legal and ethical issues related to radiologic sciences.	Because a new instructor was hired for RS 5313 resulting in different instructional methods, this tool was not used in 2017. In 2019, it may be necessary to revise instruction so that students are also responsible for addressing every comment on their original post as well as responding to two of their classmates' posts to see different legal issues.

QEP 2021 Institutional Effectiveness Review Summary

Instructions- **The following will serve to document our ongoing review and analysis of institutional effectiveness data to support the development of our 2021 Quality Enhancement Project. Please complete and return by December 14, 2018. This document will be included in our QEP Report.**

Program- **(check your program)**

B.S. Programs

_____ Clinical Laboratory Sciences
_____ Cytogenetic Technology
_____ Cytotechnology
_____ Diagnostic Imaging
__X___ Histotechnology
_____ Medical Dosimetry
_____ Molecular Genetic Technology
_____ Radiation Therapy

M.S. Programs

_____ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- **(check the agency that applies to your program)**

_____ **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
_____ **Joint Review Committee on Education in Radiologic Technology (JRCERT)**
___X__ **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**

Program Director **(initial next to your name)**

MB___ Mark Bailey
_____ Shaun Caldwell
_____ Dr. Mahsa Dehganpour
_____ Dr. Jun Gu
_____ Dr. Brandy Greenhill
_____ Dr. Peter Hu
_____ Dr. William Undie

Student Enrollment **(indicate the enrollment for each year below)**

2018-2019 ___32 students
2017-2018 ___31 students

Data Reviewed (check all that apply)

_X____ Program Self Study
_X____ QEP 2010 Program Summary Report
_X____ Certification Exam Results
_____ Employer Survey
_____ Student Course Survey
_X____ Curriculum Committee Meeting Minutes
_____ Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

Strong biological science background
ASCD BOC Individual scores 50-70 points above national average
Excellent didactic application to lab competencies
Independent study on theory of histotechnology lab practicum

Current Program strengths (reference reviewed data, bullet points are acceptable)

3 year average 90 % pass rate on ASCD BOC HTL Exam
Access to robust student histotechnology labs
Job placement rates 3 year average 80%
1:9 faculty to student ratio

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

Development of a high competency testing lab
Development of a duel degree career ladder program
IPE with Pathologists' Assistant Program

QEP project that would benefit your students (select **one**)

__X___ Interprofessional Education
_____ Competency Based Education
_____ Ethics
_____ Other (please specify)_____

Department: School of Health Professions

Degree Program: B.S. Program in Histotechnology

Cycle Date: 9/2017 – 8/2018

Program Mission Statement and Description of the Program:

The mission of the U.T. M. D. Anderson Cancer Center Program in Histotechnology, in concert with the mission and vision of M. D. Anderson Cancer Center, is to develop and maintain quality programs in education that educate graduates, who are prepared didactically and who are technically competent to enter the workforce as an entry level histotechnologists to promote excellence in the professional and ethical conduct of students in Histotechnology.

Vision: We shall be the premier educational Program in Histotechnology by providing innovative curricular, clinical and continuing education services to the University of Texas M. D. Anderson Cancer Center, the State of Texas and the world.

Goals: The Program in Histotechnology is committed to:

- Instructing students with the theoretical knowledge and technical competencies in histotechnology to perform procedures at entry level, within routine and specialty areas of the histopathology laboratory, and to complete the Bachelors of Science program and successfully pass the ASCP BOC HTL certification exam..
- Providing students with the writing, reading, speaking, critical thinking and computing skills sufficient to analyze, interpret and problem solve histologic techniques in contemporary histopathology laboratories and as educated citizens of the world at large.
- Instilling an ethical and professional code of conduct towards fellow health care professionals, visitors and patients.
- Imparting an appreciation of the need for lifelong learning experiences, professional leadership skills and competency through continuing education.
- Graduating students who value cultural differences and have the ability to interact and effectively work in a diverse workforce.

Program Accreditation: The Program in Histotechnology curriculum conforms to the standards published and monitored by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). During their 3 semester year in the program the students will receive classroom lectures, laboratory demonstrations and be able to demonstrate entry instilling level histotechnology competencies.

Student Learning Outcomes
Program Name: Program in Histotechnology

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	Exhibit professionalism during clinical rotations with respect to timeliness.	Clinical Rotation Student Evaluation forms in HT4521 Clinical Rotation I, HT4522 and HT4523 Clinical Rotation courses. Narrative: Students are taught professionalism throughout the curriculum in various courses including: HT4312 Theory & Practice of Histotechniques I HT4312 Theory & Practice of Histotechniques I HT4241 Histotechnology Laboratory Operations I HT4241 Histotechnology Laboratory Operations I HT4241 Histotechnology Laboratory Operations II These areas include: timeliness, alert and attentive. Asks relevant questions and seeks additional information. Follow through with problems. Performs routine assigned tasks and completes required assignments through daily and course objectives. Works well independently and in groups. Admits to errors or mistakes when made and recognizes limitations. Accepts and applies constructive criticism when confronted. Communicates professionally with other classmates and maintains work quality and quantity.	80% of the students demonstrated acceptable professional performance competencies. 20% of the students who originally showed unacceptable performance improved through remediation	Students were evaluated on a 5 point based on the following profession competencies. 1. Regularly arrives at the assigned time and. begins work promptly 2. Follows laboratory notification policies regarding absences or tardiness 3. Displays enthusiasm and willingness to learn from laboratory personnel 4. Accepts constructive criticism and implements corrective actions 5. Demonstrates courtesy, consideration and tactfulness toward others 6. Practices professional confidentiality and integrity 7. Demonstrates interest in educational opportunities to learn new materials 8. Follows established laboratory procedures	Results of individual and group performances analyzed and modifications made based on these data. For example, pre rotation session with the Program Director on Professional Etiquette for the 2018-19 cohort.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 2	Comprehend and apply principles of laboratory safety.	Instruction in appropriate specimen collection, transport and storage conditions for each specimen type and testing modality following safety rules throughout the curriculum in various courses including: HT4241 Histotechnology Laboratory Operations I HT4413 Theory & Practice of Histotechniques II HT4521 Clinical Rotation I HT4522 Clinical Rotations II HT4523 Clinical Rotation III. Methods used including: • Lab safety lab practice and competency testing • MD Anderson annual lab safety training online course Safety assessment/evaluation through HT4241 Histotechnology Laboratory Operations	80% of the students passed safety competency exam with their first attempt 100% of the students completed online MD Anderson Lab Safety training course and submitted certificate of completion All students satisfied rotation safety requirement at all clinical sites	Students were evaluated on a 5 point scale for the following aspects: 1. Knowledge and skills in application of safety and governmental regulations and standards as applied to Histotechnology 2. Perform and monitor quality control indicators recognizing factors that affect laboratory safety 3. Safety issues relevant to receive, accession and evaluate for appropriateness of each specimen type 4. Working knowledge of safety regulations (reporting fires, exit routes, MSDS book, personal protective equipment, etc.)	Instructors and clinical rotation preceptor feedback from course evaluations, semester individual student conferences were discussed in the program. Deficiencies and possible corrective actions were brought up to the advisory committee meeting for further discussion and approval.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 3	Microtomy Competency Exam	Microtomy laboratory instruction to teach competencies were provided in the courses HT4312 and HT4413 Theory and Practices of Histotechniques I & II. The microtomy practical entails a timed assessment to measure the student's competency in microtomy. Students will be given time to label specimen slides before the timed assessment begins. The student will be given one hour to trim and section 25 blocks of assorted paraffin embedded tissues and place the tissue on the examination slide.	90% of the students passed the microtomy competency exam on their first attempt. The average score, in which the students received on the exam, was an 88.	Students were evaluated on a 5 point scale for the following microtomy competencies: 1. Number of blocks trimmed & sectioned evenly in 60 minutes 2. Number of sections mounted in the center of the slide 3. Number of slides: exhibiting H&E staining quality 4. Number of slides: Labeling & coverslip quality	The microtomy instructor offers after-hours 1 on 1 scheduled remediation sessions with our program's students.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 4	Special Stains Diagnostic Work Flow Simulation	Demonstration of special staining competencies as a part of the HT4413 course curriculum to test their critical thinking competencies. Students are provided 2 special stain request diagnostic forms from a pathologist.	90% of the students passed the special stains simulation competency exam on their first attempt. The average score, in which the students received on the exam, was an 88.	1. Students will receive one error on the form (case #, block #, control tissue for stain, etc.), and one stain they have performed. 2. For each error, they have to ask for clarification before beginning the procedure. 3. The form has multiple stains and/or recuts. If the reagents are not available, the student will advise the pathologist a comparable stain. (E.g. Student would recommend a Sudan Black B dye as a substitute an Oil Red O dye to stain lipids.) 4. Students will conduct a slide review with the instructor to explain their methodology in assessing the pathologist request. 5. Students have one week to complete the pathologist request competency. **Scoring Instructor Assistance:** 5 pts: no assistance 4 pts. 1 assist 3 pts. 2 assist 2 pts. 3 assist 1 pt. 4 assist 0 pts. 5 or more assist	The special stains instructor offers 1 on 1 remediation assistance for the students after regular school hours.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 5	Comprehensive Laboratory Practicum (Spring: Last 3 weeks of the semester.)	Students will complete a comprehensive practical final exam exhibiting entry level competencies in histotechniques i.e.: processing, embedding, frozen and paraffin tissue sectioning, special and IHC staining and cover slipping.	90% of the students passed the comprehensive practicum competency exam on their first attempt. The average score, in which the students received on the exam, was an 85.	Students were evaluated on a 5 point scale for the following histotechniques competencies: A. Embedding Tissue Specimens 1. Maintains accurate specimen identification 2. Orients tissue correctly in blocks so that reembedding is not required 3. Avoids the formation air bubbles or multi-layering of the paraffin block 4. Demonstrates the ability to troubleshoot & resolve issues with the specimen B. Microtomy 1. Trimming & alignment of the tissue block 2. Reviews slides to evaluate the microscopic quality C. Staining Techniques 1. Selects appropriate reagents to perform staining procedure 2. Demonstrates ability to troubleshoot & resolveproblems with special stain technique 3. Microscopic quality of sections; is the component selected for demonstration clearly D. Coverslipping Quality 1. Neat & Free of Debris 2. Slide has appropriate information to identify the type of stain and tissue	The Histotechnology program faculty evaluates the assessment outcomes at the conclusion of the spring semester and modifies the practicum where the students performed poorly.

QEP 2021 Institutional Effectiveness Review Summary

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Program- (check your program)

B.S. Programs

_____ Clinical Laboratory Sciences
_____ Cytogenetic Technology
_____ Cytotechnology
_____ Diagnostic Imaging
_____ Histotechnology
___X__ Medical Dosimetry
_____ Molecular Genetic Technology
_____ Radiation Therapy

M.S. Programs

_____ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- (check the agency that applies to your program)

_____ **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
__X___ **Joint Review Committee on Education in Radiologic Technology (JRCERT)**
_____ **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**

Program Director (initial next to your name)

_____ Mark Bailey
_____ Shaun Caldwell
__X___ Dr. Mahsa Dehganpour
_____ Dr. Jun Gu
_____ Dr. Brandy Greenhill
_____ Dr. Peter Hu
_____ Dr. William Undie

Student Enrollment (indicate the enrollment for each year below)

2018-2019 _29____ students
2017-2018 _34____ students

Data Reviewed (check all that apply)

__X___ Program Self Study
__X___ QEP 2010 Program Summary Report
__X___ Certification Exam Results
__X___ Employer Survey
__X___ Student Course Survey
__X___ Curriculum Committee Meeting Minutes
__X___ Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

- Strong clinical skills based on their competencies, which translates into their marketability and high employment rate
- Proton treatment planning knowledge and skills, which is a unique skill our students acquire during their education. Many other dosimetry programs don't offer this skill due to lack of access.
- Participation in clinical research under the mentorship of the clinical medical physicists and medical dosimetrists at MDA, which often results in receiving awards in the AAMD Student Writing Competition , poster presentations, and publications

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Current Program strengths (reference reviewed data, bullet points are acceptable)

- Strong clinical education in the laboratory and clinical settings that includes a variety of treatment planning techniques from 3D to VMAT, a variety of disease sites, and the state-of-the-art proton therapy
- Synchronous distance-learning components that allow more flexibility in program's offerings and expanding the education beyond Houston and Texas
- High job placement rate

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

- Expand the number of affiliated clinical sites to provide more opportunities for student enrollments for non-local students
- Enhance opportunities for interprofessional education that would allow a more well-rounded education
- Changing the program to a master level program

QEP project that would benefit your students (select **one**)

__X___ Interprofessional Education
_____ Competency Based Education

_____ Ethics
_____ Other (please specify)_____

Department: Medical Dosimetry
Degree Program: BS in Medical Dosimetry
Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission
To provide high quality of didactic and technologically advanced clinical education in Medical Dosimetry and to graduate professional practitioners who are valued by radiation oncology employers, display excellent treatment planning and assessment skills, and remain active in the professional community and learning throughout their careers.

Vision
We shall be the premier educational program in medical dosimetry by providing innovative curricular, clinical and continuing education services to the University of Texas MD Anderson Cancer Center, the State of Texas and the world.

Goals
Fulfillment of the program's mission is assessed by the degree to which the program achieves the following goals
Goal 1: Students will be clinically competent.
Goal 2: Students will display critical thinking skills.
Goal 3: Students will practice ethically and determine the importance of professional growth.
Goal 4: Students will display effective communication skills.

Program Accreditation: This curriculum conforms to the standards published and monitored by the Joint Review Committee of Education of Radiologic Technology (JRCERT). During the program, students receive classroom lectures, laboratory demonstrations and technical experience.

Student Learning Outcomes
Program Name: Medical Dosimetry

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	Demonstrate clinical competence in terms of creating treatable plans and understanding science concepts	**Clinical Rotation Evaluation Forms in MD 4510 Clinical Education III** Narrative: students learn clinical skills and treatment planning during their clinical education. We utilize clinical rotation evaluation form to evaluate students' professional conduct and clinical skills during MD 4510 Clinical Education III Course. We use specifically question number 4 in section II, which read "after practice is able to independently produce plans as required for the competency" and question 3 on section II, which read: "Exhibits knowledge of anatomy, tumor dose, dose tolerance, and typical field arrangement."	For questions #4, students received an average score of 4.82 out of 5.0 with median of 4.9. All students received a score of 3.0 out of 5.0. For questions #4, 4 out of 18 (22%) students didn't receive a score of 5 out of 5. The majority of students received perfect score in this item. For questions #3, students had an average score of 4.0 out of 5.0 or higher (average = 4.98; median = 5). 1 out of 18 (0.05%) students didn't receive a score of 5 out of 5. The majority of students received perfect score in this item.	Students were evaluated on 5 point scale with 1 being very poor, 2 being poor, 3 being average, 4 being good, and 5 being very good.	Results of individual and group performance were analyzed. We encouraged students to ask for more feedback on their practice plans and we encouraged more mentor-student interaction in the clinic. We also strongly recommended students to have their practice plans reviewed by mentors before attempting to work on their competency plans.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 2	Demonstrate critical thinking skill as relates to dealing with real life situations in clinic and ability to multitask	**"problems in the clinic" assessment in MD 4401 Radiation Physics** Students learn about how to deal with real life clinical problems in MD 4401 Radiation Physics. We use the results of the "problems in the clinic" assessment to evaluate students' ability to critically think and solve these problems. **Clinical Rotation Evaluation Forms in MD 4510 Clinical Education III** We evaluated question 5, Section II of the Clinical Rotation Evaluation Form, which read "Shows the ability to organize and prioritize duties to efficiently complete requirements"	4 students received a score between 80-89.5 (B), 14 students received a score between 90 and 100 (A). All students demonstrated acceptable performance. Students had an average score of 3.0 out of 5.0 or higher with an average of 4.91; and median = 5 3 out of 18 received a score below 5.0 and 15 out of 18 received a perfect score of 5.0.	75% is a passing grade on the assessment but a grade above 80% is satisfactory. 3 out of 5 is considered average performance, 4 out of 5 is satisfactory and 5 out of 5 is perfect performance.	Solving clinical problems is a very important skill. We introduced this concept to the students during junior year and re-emphasized it again during the senior year. To improve performance, we utilized flip classroom strategy to have more time in the class for group activities and problem solving. To improve students' ability to multitask, we provided detailed feedback to the students who struggle in this area. We seek feedback from clinical mentors and communicate those feedback with the students.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 3	Demonstrate professional conduct as relates to lifelong learning	**Employer Survey** **Alumni Survey** Narrative: The medical dosimetry program conducts employer and alumni survey every 3 years. We evaluate the question 15 on employer surveys, which read "Participates in activities demonstrating professional growth and development". We also evaluate the questions 14-16 on alumni surveys, which asks about alumni's membership in AAMD (Q#14), MDCB (Q#15), and attending continuing education opportunities (Q#16).	For Employer Survey, the average score on the question#15 is 4.5 out of 5.0. For Alumni Survey, the average score from these questions is 4.41 out of 5.0.	5 indicates very strong participation 4 indicates strong participation 3 indicates average participation 2 indicates poor participation 1 indicates very poor participation	The average score of 4.5 out of 5 indicates a strong participation in professional activities by the medical dosimetry program alumni. The average score of 4.41 indicates a satisfactory participation in professional activities by the medical dosimetry program alumni. We required our students to obtain AAMD membership while in the program and submit their research papers to the AAMD student writing competition. We financially supported our students to attend AAMD annual meeting and encouraged them to take the MDCB board after graduation.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 4	Demonstrate communication skills in terms of both oral and written	**Research paper grading rubric in MD 4306 Research in Radiologic Sciences** Narrative: item 5 of the research rubric is about "language use and conventions". We use that item to evaluate students' written skills. **Competency presentation evaluation form in MD 4510 Clinical Education III** Narrative: students should present and defend each of their competency plans. Questions 1, 2, 5 and 6 on the presentation evaluation form is used to assess students' oral communication skills.	Students received an average score of 4.89. 4 out of 18 students received a score of 4.5 and 14 out of 18 received a score of 5 out of 5 on this item. The majority of students 14 out of 15 received a perfect score. One student received an average of 4.8 on these questions.	5 indicates a very strong written/oral communication skill, 4 indicates strong written/oral communication skill, 3 indicates average written/oral communication skill, 2 indicates poor written/oral communication skill and 1 indicates very poor written/oral communication skill	The medical dosimetry program faculty provided individualized feedback regarding the mechanics of the paper in different phases of students' writing in order to improve their writing skills. The medical dosimetry senior health educator who attends the presentation defends provided both verbal and written feedback about students presentation skills, which helped improve students' oral communication skills.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 5	Demonstrate understanding of their professional codes of ethics.	**Medical Dosimetry Professional Codes of Ethics Assessment in MD4508 External Beam Dosimetry** Narrative: Students are taking a written assessment covering the medical dosimetry professional codes of ethics put forth by the American Association of Medical Dosimetrists (AAMD).	94.4% (17 out of 18) of students had an average score of 80% or above on the professional codes of ethics exam (average = 94.44; median = 100).	Grade 80 and above is considered satisfactory	The program faculty taught the medical dosimetry professional codes of ethics and conducted ethical decision making interactive review sessions with students to improve students understanding of ethics in allied health profession.

QEP 2021 Institutional Effectiveness Review Summary

Instructions- The following will serve to document our ongoing review and analysis of institutional effectiveness data to support the development of our 2021 Quality Enhancement Project. Please complete and return by December 14, 2018. This document will be included in our QEP Report.

Program- (check your program)

B.S. Programs

_____ Clinical Laboratory Sciences
_____ Cytogenetic Technology
_____ Cytotechnology
_____ Diagnostic Imaging
_____ Histotechnology
_____ Medical Dosimetry
___x__ Molecular Genetic Technology
_____ Radiation Therapy

M.S. Programs

___x__ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- (check the agency that applies to your program)

_____ **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
_____ **Joint Review Committee on Education in Radiologic Technology (JRCERT)**
___x__ **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**

Program Director (initial next to your name)

_____ Mark Bailey
_____ Shaun Caldwell
_____ Dr. Mahsa Dehganpour
_____ Dr. Jun Gu
_____ Dr. Brandy Greenhill
___x__ Dr. Peter Hu
_____ Dr. William Undie

Student Enrollment (indicate the enrollment for each year below)

2018-2019 ___62__ students
2017-2018 __49___ students

Data Reviewed (check all that apply)

__x___ Program Self Study
__x___ QEP 2010 Program Summary Report
__x___ Certification Exam Results
__x___ Employer Survey
__x___ Student Course Survey
__x___ Curriculum Committee Meeting Minutes
_____ Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

14 year 99.7% graduation rate.
14 year 978% placement rate within 6 months of graduation
14 year 96.1% first attempt pass rate on board certification exam

Current Program strengths (reference reviewed data, bullet points are acceptable)

2 of 9 programs in the United States. Only undergraduate DMS program in State of Texas, 1 of 3 graduate DMS program in State of Texas. Comprehensive curriculum that includes both didactic and practical experience with state-of-the-art equipment.

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

IPE with molecular imaging program. Additional Tracks within Diagnostic Genetics program.

QEP project that would benefit your students (select **one**)

_____ Interprofessional Education
_____ Competency Based Education
_____ Ethics
_____ Other (please specify)_____

Department: Molecular Genetic Technology

Degree Program: BS in Molecular Genetic Technology

Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission: To provide the highest quality of didactic and technologically advanced clinical education in Molecular Genetic Technology graduating professional practitioners that are valued by molecular diagnostic employers, display precision and accuracy in performing molecular techniques and other related assessment skills, and remain active in the professional community and learning throughout their careers.

Vision: We shall be the premier educational program in Molecular Genetic Technology by providing innovative curricular, clinical and continuing education services to the University of Texas M.D. Anderson Cancer Center, the state of Texas, and the world.

Goals:

Programmatic goals include obtaining a selection of both diverse student and faculty educational and experiential backgrounds to foster increased interdisciplinary understanding of molecular genetics and to graduate students with a bachelor degree in molecular genetic technology.

Program Accreditation: This curriculum conforms to the standards published and monitored by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and technical experience.

Student Learning Outcomes

Program Name: Molecular Genetic Technology	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement

Outcome 1	Professional Core-Skills (Personal Skills) *Students will demonstrate professionalism by arriving at the assigned time prepared for the day's assignment, is alert and attentive. Ask relevant questions and seeks additional information. Perform routine assigned tasks and completes required assignments. Communicates professionally with other healthcare personnel and maintains work quality and quantity.*	Clinical Rotation Student Evaluation forms in MG4560 Clinical Rotation 1 course and MG4570 Clinical Rotation II course. Narrative: Students are taught professionalism throughout the curriculum in various courses including: MG4510 Molecular Diagnostic Techniques: The course will provide participants with hands on laboratory experience in: performing molecular techniques such as DNA extraction, purification and quantification; preparing and viewing gel electrophoresis; conducting PCR and Real-Time PCR experiments; and designing primers and performing Sanger sequencing with assay optimization and troubleshooting. MG4310 Molecular Diagnostic Techniques II: This lecture/laboratory course will introduce the student to human identity testing. The course provides an application of skills such as extraction, amplification, quantitation, capillary electrophoresis, fragment analysis and population genetics for forensic DNA analysis and / or paternity testing. MG 4320 Molecular Diagnostic Techniques III: This course will provide participants with a didactic understanding of advanced laboratory processes and procedures. The topics covered include a practical and theoretical understanding of platform methodologies including real-time PCR expression analysis,	MG4560 and MG4570 Clinical Student Evaluation Forms: 14 out of 18 the students demonstrated acceptable performances, were careful, and showed adequate attention to detail with minimal supervision. 4 of the 18 students rarely required assistance with evaluation of situations and solutions.	Students were evaluated on a 5 point scale with: 1 = Student demonstrates difficulty grasping important functions and tasks in the clinical laboratory. 2 = Student functions inconsistently in the clinical laboratory, with consistent and detailed instruction required achieving acceptable performances. 3 = Student demonstrates acceptable performances with supervision. Requires assistance with evaluation of situations and solutions. 4 = Student demonstrates performance, is careful, and shows adequate attention to detail. Requires minimal supervision. 5 = Student demonstrate performance with above average level of skill. Rarely requires assistance with evaluation of situations and solutions.	Results of individual and group performances analyzed and modifications made based on these data. For example, pre rotation session with the Program Director on Professional Etiquettes was introduced. A panel workshop made up of clinical supervisors and managers were introduced prior to rotation. Mock interviews were introduced as well as resume building excercises.

Program Name: Molecular Genetic Technology	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
		microsatellite instability, methylation-specific PCR, Sanger sequencing and Next Generation sequencing. Data analysis, statistical evaluation and troubleshooting are also covered. Within these courses, areas introduced include: timeliness, alert and attentive. Asks relevant questions and seeks additional information. Follow through with problems. Performs routine assigned tasks and completes required assignments through daily and course objectives. Works well independently and in groups. Admits to errors or mistakes when made and recognizes limitations. Accepts and applies constructive criticism when confronted. Communicates professionally with other classmates and maintains work quality and quantity.			

Program Name: Molecular Genetic Technology	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 2	Technical Performance *Student will demonstrate successful polymerase chain reaction (PCR) setups independently*	Students are assessed by PCR product size being appropriate to the predicted size, the quality or efficiency of amplification, and no interfering contamination found in the negative control. MG4510 Molecular Diagnostic Techniques: The course will provide participants with hands on laboratory experience in: performing molecular techniques such as DNA extraction, purification and quantification; preparing and viewing gel electrophoresis; conducting PCR and Real-Time PCR experiments; and designing primers and performing Sanger sequencing with assay optimization and troubleshooting. MG4310 Molecular Diagnostic Techniques II: This lecture/laboratory course will introduce the student to human identity testing. The course provides an application of skills such as extraction, amplification, quantitation, capillary electrophoresis, fragment analysis and population genetics for forensic DNA analysis and / or paternity testing. Within these courses, setting up PCR reactions are a routine. By the end of these exercises each student has set up more than 200 PCR reactions.	By the end of the spring semester, 18/18 students were able to independently set up PCRs with acceptable products post reactions and without interfering contaminations in negative controls.	Students correctly performed PCR setup resulting in amplification of the appropriate product size and without interfering negative control contamination	Results of individual performances were analyzed. Other forms of PCR set up were introduced including multiplex, real-time, and nested. These PCR set-ups are more advanced involving more steps.

Outcome 3	Technical Performance *Student will demonstrate successful RNA sample extractions independently from blood samples*	Students are assessed by the quantity and quality of RNA extracted from the blood using the Nanodrop instrument to assess quantity and the 28S:18S ratio for quality along with amplification of a common housekeeping gene. MG4510 Molecular Diagnostic Techniques: The course will provide participants with hands on laboratory experience in: performing molecular techniques such as DNA extraction, purification and quantification; preparing and viewing gel electrophoresis; conducting PCR and Real-Time PCR experiments; and designing primers and performing Sanger sequencing with assay optimization and troubleshooting. MG4310 Molecular Diagnostic Techniques II: This lecture/laboratory course will introduce the student to human identity testing. The course provides an application of skills such as extraction, amplification, quantitation, capillary electrophoresis, fragment analysis and population genetics for forensic DNA analysis and / or paternity testing. Students performed RNA extraction set ups with one on one supervision with feedback on technique and performed the same techniques in subsequent laboratory exercises. This technique was assessed in the final laboratory practical exam.	By the end of the spring semester, 18/18 students independently demonstrated acceptable performance in extracting RNA resulting in minimal RNA degradation and adequate amplification of the housekeeping gene.	Students extracted RNA from a blood sample without excessive RNA degradation as determined by the 28S:18S ratio (>1.5) and the successful amplification of the housekeeping gene following reverse transcription.	Results of individual performances were analyzed and the number of RNA extraction exercises were increased during the fall semester.

Outcome 4	Technical Performance *Applying principles, practices and applications of micro-pipetting for molecular based testing for clinical laboratory testing purposes*	Student Laboratory activities in HS3203: Narrative: Students are taught pipetting throughout the curriculum in various courses including: HS 3203 Basic Advanced Molecular Techniques Laboratory II: At the bench, students learn the effective organizational and technical skills for processing multiple samples for gDNA extraction from a variety of specimen types, DNA quantitation, PCR amplification, gel electrophoresis and proper visualization and documentation of results. There is a greater focus on carrying out experimental objectives in accordance with proper quality assurance and quality control guidelines while placing a stronger emphasis on delivering timely, accurate and reproducible results. Proper documentation habits are adhered throughout the experimental process from sample receipt to final analysis and reporting of experimental results. PCR troubleshooting basics, restriction digestion and restriction mapping, as well as an introduction to molecular cloning. Effectively, the student solidifies a very strong foundation in all the basic techniques of the molecular lab. MG4510 Molecular Diagnostic Techniques: The course will provide participants with hands on laboratory experience in: performing molecular techniques such as DNA extraction, purification and quantification; preparing and viewing gel electrophoresis; conducting PCR and Real-Time PCR experiments; and designing primers and	13/18 demonstrated acceptable pipetting, were careful, and showed adequate attention to detail with minimal supervision. 5/18 students required assistance with pipetting small volumes and viscous solutions.	Students must complete the following activities with a score of ***75% correct or better for each activity:*** 1. Training exercise to Pipet, pool, & un-pool volumes of 20, 15, 10, 5, 2, and 1 ul in 96-well formats. (Initially 24% needed assistance after training.) 2. Dilute DNA of various concentrations to a consistent 25ng/ul, in final volumes of 50-200 ul. Repeated with 5 different DNA tissue sources. Concentration is evaluated using a Spectrophotometer. Accurate pipetting will result in consistent DNA concentrations. (Initially 12% needed assistance, by end of course 6% needed assistance.) 3. Set-up multiple PCR (3-10) reactions at 9 different loci during the semester. Volumes range from 1-100 ul. Accurate pipetting will result in a successful PCR product outcome. Unsuccessful (poor pipetting) outcomes receive a lower score. (By end of course, 12% were still not consistent.) Lab Practical Final exam where accurate, consistent pipetting will result in successful PCR outcomes. Successful outcomes will result in a higher exam score, where poor pipetting will lead to poor PCR outcomes, thus lower scores. (12% had poor outcomes due to pipetting errors.)	Pipetting is one of the most common laboratory skills and also one of the most critical as the quality of test results is highly dependent on accurate and precise liquid handling. Results of individual and group performances were analyzed and modifications made based on these data. For example, *students who received a score below 80% correct on any activity were given further one-on-one coaching and monitored* for improvement to identify potential sources of error.

		performing Sanger sequencing with assay optimization and troubleshooting. MG4310 Molecular Diagnostic Techniques II: This lecture/laboratory course will introduce the student to human identity testing. The course provides an application of skills such as extraction, amplification, quantitation, capillary electrophoresis, fragment analysis and population genetics for forensic DNA analysis and / or paternity testing. MG 4320 Molecular Diagnostic Techniques III: This course will provide participants with a didactic understanding of advanced laboratory processes and procedures. The topics covered include a practical and theoretical understanding of platform methodologies including real-time PCR expression analysis, microsatellite instability, methylation-specific PCR, Sanger sequencing and Next Generation sequencing. Data analysis, statistical evaluation and troubleshooting are also covered. Pipetting technique training should educate attendees on The "how-to" of pipetting and how minor physical changes can alter the volume dispensed. Live pipetting demonstrations, coaching, and hands-on practice are effective methods to convey this information to pipetting trainees. In **HS3203**, there is a didactic class discussing the theory and the best practices of micro-pipetting. To evaluate skill development in **HS3202**, there is a hands-on lab to focus on micro-			

Program Name: Molecular Genetic Technology	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
		pipetting skills. Thereafter, outcomes of PCR assays are evaluated for pipet errors leading to unsuccessful outcomes and specific skills are targeted for improvement.			

Outcome 5	Laboratory math skills *Applying principles, practices and applications of Laboratory mathematics for molecular based testing for clinical laboratory testing purposes*	Student Laboratory activities in HS3203: Narrative: Students are taught Lab Math throughout the curriculum in various courses including: HS 3101 Basic Techniques Laboratory: An introduction to basic clinical laboratory skills common to all diagnostic programs. Emphasis on proper use of pipettors and micropipettors, sterile techniques, laboratory safety, chemical storage and proper waste disposal, calibration and use of balances, centrifuges and spectrophotometers, serial dilutions, making buffers from stocks, microscopy and slide making. HS 3203 Basic Advanced Molecular Techniques Laboratory II: At the bench, students learn the effective organizational and technical skills for processing multiple samples for gDNA extraction from a variety of specimen types, DNA quantitation, PCR amplification, gel electrophoresis and proper visualization and documentation of results. There is a greater focus on carrying out experimental objectives in accordance with proper quality assurance and quality control guidelines while placing a stronger emphasis on delivering timely, accurate and reproducible results. Proper documentation habits are adhered throughout the experimental process from sample receipt to final analysis and reporting of experimental results. PCR troubleshooting basics, restriction digestion and restriction mapping, as well as an introduction to molecular cloning. Effectively, the student solidifies a very	15/18 of the students demonstrated acceptable lab math calculations and showed adequate attention to detail with minimal supervision. 3/18 of the students required assistance with lab math calculations.	Students must complete the following activities ***with a score of 75% correct or better for each activity:*** 1. Practice Training exercise to calculate concentrations and volumes to prepare all PCR stock reagents, working stock solutions and set up a variety of PCR assays. (~20% of students required assistance) 2. Complete calculations for diluting DNA of various concentrations to a consistent 25ng/ul, in final volumes of 50-200 ul. Repeated with 5 different DNA tissue sources. Concentration is evaluated using a Nanodrop Spectrophotometer. Accurate calculations will result in consistent target DNA concentrations. (Initially, ~20% of students required assistance. Later, 6% required assistance.) 3. Do calculations to set-up multiple PCR (3-10) reactions at 9 different loci during the semester. Accurate calculations will result in a successful PCR product outcome. Unsuccessful (poor math) outcomes receive a lower score. (By end of course, 6% still required assistance.) Lab Practical Final exam where accurate calculations will result in successful outcomes. (0% had poor outcomes due to math errors.)	Lab math is one of the most common laboratory skills and also one of the most critical as the quality of test results is highly dependent on accurate calculations. Results of individual and group performances analyzed and modifications made based on these data. For example, ***students who received a score below 80% correct on any activity were given further one-on-one coaching and monitored*** for improvement to identify potential sources of error.

		strong foundation in all the basic techniques of the molecular lab. MG4510 Molecular Diagnostic Techniques: The course will provide participants with hands on laboratory experience in: performing molecular techniques such as DNA extraction, purification and quantification; preparing and viewing gel electrophoresis; conducting PCR and Real-Time PCR experiments; and designing primers and performing Sanger sequencing with assay optimization and troubleshooting. MG4310 Molecular Diagnostic Techniques II: This lecture/laboratory course will introduce the student to human identity testing. The course provides an application of skills such as extraction, amplification, quantitation, capillary electrophoresis, fragment analysis and population genetics for forensic DNA analysis and / or paternity testing. MG 4320 Molecular Diagnostic Techniques III: This course will provide participants with a didactic understanding of advanced laboratory processes and procedures. The topics covered include a practical and theoretical understanding of platform methodologies including real-time PCR expression analysis, microsatellite instability, methylation-specific PCR, Sanger sequencing and Next Generation sequencing. Data analysis, statistical evaluation and troubleshooting are also covered.			

Program Name: Molecular Genetic Technology	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
		Lab Math training educates attendees on The "how-to" of calculating appropriate amounts and volumes of reagents to prepare and measure for molecular assays. Didactic teaching sessions, practice problems and hands-on practice are effective methods to convey this information to molecular lab trainees. To evaluate skill development in **HS3202**, the initial teaching labs focus on lab math skills at the molecular level. Next, an extensive practice problem set activity, with discussion of how to do the calculations correctly. DNA dilutions and PCR lab preparations include independent calculations for the assay set-up, and is evaluated prior to the labs. Thereafter, outcomes of PCR assays are evaluated for math errors and for improvement.			

Department: School of Health Profession

Degree Program: MS in Diagnostic Genetics

Degree Track: Molecular Genetics and Genomics

Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program.

Mission

To provide the highest quality of didactic and technologically advanced clinical laboratory education in Molecular Genetics and Genomics graduating professional practitioners that are valued by molecular diagnostic employers and biomedical research laboratories. Our graduates must display precision and accuracy core technical skills together with critical thinking abilities required for the development of new diagnostic tools in precision genomic medicine, and remain active in the professional community and learning throughout their careers.

Vision: We shall be the premier graduate-level educational program in Diagnostic Genetics by providing innovative curricular, clinical and continuing education services to the University of Texas M.D. Anderson Cancer Center, the state of Texas, and the world.

Goals:

1. Train technologist-scientists proficient in techniques used in contemporary diagnostic Molecular Genetics and Genomics.
2. Train technologist-scientists with demonstrable evidence of applying cutting edge research methods in developing new tests or insights into disease mechanisms and discovery.

Program Accreditation: This curriculum conforms to the standards published and monitored by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and technical experience.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	Professional Core-skills: Reasoning & Judgement *Students will demonstrate the ability to identify and define problems, critically compare available technology, make timely decisions, identify uncertainties and use findings to troubleshoot outcomes in light of new evidence.*	1. Laboratory notebook Narrative: Students were provided instruction to include core theoretical foundations, technical and analytical skills in molecular biology via two principle courses in the first semester of the degree course: DG6280: Concepts in Molecular Diagnostics: this 2 hr lecture course included details on various molecular techniques and their applications. Instruction was disbursed via a 3 hr lecture on one day (theoretical foundation & application) followed by a 2 hr lecture the next day (technical details). DG6510: Advanced molecular laboratory techniques: this 5 hr laboratory course provided students with hands on experience with techniques introduced in DG6280 (above); hands on experience was gained via a minimum of 24 hr / week in the laboratory. For each weekly training module, students were provided with: i) samples from multiple patient (PHI-stripped) or other materials; ii) all required reagents; iii) a research paper or other material on which the theory/lab module was based. Students: i) *developed* the experimental protocols unsupervised based upon provided material, ii) *implemented* protocols maintaining biosafety/lab safety standards under faculty supervision; and, finally – took troubleshooting *decisions* with experimental phases that failed in consultation with supervising faculty, and following instructions provided in DG6280 coursework.	For lab notebooks: each of the six students scored between 3 - 3.5 in each of the categories outlined in attached rubric;	Students were evaluated on a 4 point scale, with 4 being outstanding; 3.5=excellent; 3; very good; 2.0=good and 1=fair. Assess_Lab_Note_PI CCDIn-1.pdf	Based on the student performance, additional one-on-one time has been made available by program faculty to work with students on the maintenance, upkeep and data recording their lab records; moreover, students are now required to make a 15 minute presentation (at the end of each weekly module) to help organize their thoughts on troubleshooting experiments, organizing figures, and synthesize experimental outcomes. A rubric to assess the student lab meeting 'talk' is appended below. Assess_Lab_Meet_M odule.pdf

Outcome 2	Professional Core-Skills: Evidence-based practice and research *Students will demonstrate the ability to access, evaluate, apply and synthesize relevant molecular genetics and genomics knowledge to support evidence-based health care, disease prevention and discovery*	1. Thesis proposal 2. Thesis manuscript 3. Oral thesis defense presentation Narrative: Students were provided with a list of research topics and principal investigators (PI) willing to mentor them for a three semester thesis research. Investigator pool was drawn from MD Anderson, Baylor College of Medicine and Houston Methodist Research Institute. Students sought meetings with investigators whose proposed research topics seemed to mesh with their interest. After the one-on-one meetings students selected one research project in consultation with their SHP academic advisor. Formally, the thesis research process was structured around three courses: DG6401, Advanced Practice - I DG6701, Advanced Practice - II DG6501, Advanced Practice - III Each student was required to independently write a research proposal supervised by their PI; thesis proposal was evaluated via the attached rubric At completion of thesis research, students were required to develop a thesis manuscript, which was evaluated as per the attached rubric At the completion of thesis research students were required to defend their thesis work in the form of 30 minute open to public oral presentation	Thesis proposal 6 out of 6 students needed to make amendments to their thesis proposal after assessment mostly on account of grammatical or stylistic errors. Thesis manuscript 6 out of 6 students submitted an electronic copy of their manuscript while adhering to the prescribed deadlines. Most needed to submit a revised version on account of grammar or style errors. Oral presentations 6 out of 6 students successfully defended their thesis via oral presentations while adhering to the deadlines. It was observed that 4/6 students scored low (between 2-3) in their oral presentation component especially with reference to questions 14-16 in the "thesis-final-defense" evaluation rubric.	Thesis proposal A minimum of 3 experts in the field and at least 1 DG faculty advisor assessed the proposal based on the following rubric and provides suggestions for improvement. Thesis Prelim Eval-Rev-2018.pdf Thesis manuscript A minimum of 3 experts in the field, and at least 1 DG faculty advisor assessed the students thesis manuscript using the following rubric: Manuscript assessment rubric -[Thesis defense a minimum of three experts in the field, and at least one faculty advisor from the DG program assessed the student's and oral presentation using the following rubric Thesis-Final Defense Evaluation.	Thesis proposals and manuscripts 6/6 students wrote manuscripts and proposals that contained grammatical errors or incorrect style or scientific conventions. Students were encouraged to seek advice from professionals from the MD Anderson Scientific Publication Department before final thesis publication (http://inside.mdanderson.org/departments/scipub/educational-programs.html). Students are now required to attend classes, workshops on speaking and/or writing in English on a regular basis Oral Presentations: To improve student skills during presentation of their thesis work the degree program introduced 'Thesis-Update-Meetings' (TUMs), which are held every last Thursday of each month from September'2018 to May'2019. Each student is required to present their monthly work-in-progress update. And each students is assessed using the appended rubric. Presentation assessment rubric -[

Outcome 3	Professional Core-Skills: Teamwork *Students will demonstrate the abilities required to foster and work effectively with in collaborative, team-based environments*	1. Teamwork assessment (by student peers); 2. Teamwork assessment (by faculty) Narrative: Project-based integrated core curriculum initiative (PICCDIn). First yr MGG students were assigned a 6 week '*real-world' problem-based project*: to characterize a hospital-based infectious outbreak. Students were split into 2 teams comprising 3 students each; each team was tasked to *design*, *implement* and *compare* multiple molecular techniques bioinformatics methods in order to *evaluate*, which molecular genomic and bioinformatics technologies worked best for the purposes of resolving the problem at hand? Each team was provided with the background data associated with the problem, samples to be genotyped, reagents for the all molecular and genomic techniques, and computing power for analysis of high throughput genomic data. Each team member was tasked to write an individual project report and maintain individual lab record (notebook). Faculty and technology experts supervised the project to ensure that all project experiments were conducted in a safe laboratory environment. In addition to DG6280 and DG6510 (outcome 1), core foundation in bioinformatics were provided 2 principle courses in the first semester of the degree course: DG6320 (Bioinformatics in DG –theory): instruction disbursed via 4 hr lecture one day followed by a 2 hr group discussion another day; and DG6110 (Bioinformatics Lab) – with hands on experience gained in the computational biology lab for a minimum of 4 hrs.	Peer-to-Peer assessment Each student was evaluated by at least 2 other students in each team. Generally each student received high points (4) on all accounts evaluated by the Peers. Faculty teamwork assessment Faculty and technology supervisors evaluated each students on a set of 11 criteria. Each students in both teams received scores ranging between (4 and 5).	The assessment process for the teamwork was composed of two parts. The first was peer evaluation where every member in a team evaluated their peers in the same team as per the rubric appended below: Peer2Peer_Assessment.pdf The second was done by the faculty instructor, and two technology instructors and took into account the final project report and lab-notebook submitted by each group member as well as direct observation of team dynamics in the lab. The evaluation was done using the following rubric. Faculty_Teamwork_Rubric.pdf	For the current all students received maximal possible ratings from all three instructors involved in the implementation of the PICCDIn. Thus, we did not make any changes for the next cycle.

Outcome 4	Professional Skills: Professionalism and ethics *Students will demonstrate competence in the core knowledge, skills and practices; student will demonstrate integrity, honesty, knowledge of ethical principles and the standard of professional conduct and the ability to apply ethical principles in clinical laboratory and research*	1. Students competence - laboratory skills 2. Student overall performance assessment Narrative: DG-MGG students undertook clinical laboratory rotations in the spring semester of the first year. Clinical laboratory rotations constituted two course: DG6560 Clinical Rotation 1; and DG6570 Clinical Rotation II. Students were evaluated by clinical lab preceptors and technical instructors at two levels: 1. Technical competence: Students' ability to perform a variety molecular techniques that were practiced in the host clinical diagnostic laboratory; 2. Students overall performance assessment. These areas included: timeliness, alert and attentive. Asked relevant questions and sought additional information. Followed through with problems. Performed routine assigned tasks and completed required assignments through daily and course objectives. Worked well independently and in groups. Admitted to errors or mistakes when made and recognized limitations. Accepted and applied constructive criticism when confronted. Communicated professionally with other classmates and maintained work quality and quantity. Demonstrated and applied the knowledge of ethical principles in diagnostic genomics. Instruction on each of these areas was provided via DG6280, DG6510, DG6320, and DG6110 courses in the preceding fall semester.	Core technical competence assessment: 6/6 DG-MGG students received PAS (performs at or above minimal lab competency standards) assessment from the clinical lab preceptor; Student overall Assessment: 1/6 DG-MGG scored a low score of 1 in one category under professionalism (personal skills): 1. "Arrived at the assigned time prepared for the day's assignment. Informs instructor when leaving the area"	The assessment process for the Professionalism and ethics was composed of two parts. The first was clinical preceptor assessment where each students was evaluated on their competence in performing a number of molecular techniques as per the rubric appended below: Laboratory Rotation Assessmen The second was done by the clinical preceptor based on feedback by technology instructors and took into the following categories: Professionalism; Reporting results Safety procedure compliance Knowledge of ethical principles The evaluation was done using the following rubric. Student_Performac e Assessment.pdf	Student handbook has been revised to reinforce the importance of professionalism in clinical diagnostic lab. Students are now required to attend an orientation session with the program faculty, including program director, prior to being sent out for clinical lab rotations.

Outcome 5	Professional Skills: Communication *Students will demonstrate oral and written communication skills with diverse individuals, communities, and colleagues to ensure effective exchange of information*	1. Oral Presentation in Local, State, National/International Meetings of Field Appropriate Professional Societies; OR 2. Poster Presentation in Local, State, National/International; OR 3. Peer-Reviewed Publication in a Journal Index in the PubMED and Google Scholar. OR 4. Any combination of 1, 2, and 3. Narrative: Here, students worked with the program faculty, as part of the DG6100 clinical seminar course, with their own thesis research data, who provide the students with guidance with presentations style, and organization. Faculty use: TED Talks: The official TED guide to public speaking: Tips and tricks for giving unforgettable speeches and presentations, by Chris Anderson, 2016, for reference. Guidelines for poster presentation were also provided to students as part of the clinical seminar course.	6/6 DG-MGG students presented posters at the 138th Annual Meeting of the Association of Clinical Scientists; 5/6 DG-MGG students made oral presentations at the 38th Annual Meeting of the Association of Clinical Scientists; 5/6 students published their work in peer-reviewed, high impact journals; 3/6 students had a first author publication.	The assessment process for communication skills was dependent upon acceptance of the work to be presented or published by the Peer-reviewers of major society conferences or journals. Acceptance of the work, and subsequent presentation or publication was considered as adequate outcome.	Since all students presented their work in peer-reviewed professionals society proceedings or in peer-reviewed journals our outcomes were deemed satisfactory. However, outcomes also suggested that students in the next cycle needed to think about converting their thesis work into a peer-reviewed publication much earlier than students in the current cycle. This stems from the observation there was as much as 3-5 month time differential between paper submissions to paper acceptance. Thus we have provided students with a brief guide on getting published in a timely fashion. 10 tips to get published.pdf

PICCDIn Lab-Notebook Recording

Project: Molecular and Genomic Characterization of Infectious Outbreak in Pediatric Oncology Unit.

Faculty Instructor: Awdhesh Kalia

Student Name: _____

CATEGORY	4	3	2	1
Question/Purpose	The purpose of the lab or the question to be answered during the lab was clearly identified and stated. Every sub-lab was neatly categorized in Aim; Goals and Objectives	The purpose of the lab or the question to be answered during the lab was identified, but was stated in a somewhat unclear manner.	The purpose of the lab or the question to be answered during the lab was partially identified, and was stated in a somewhat unclear manner.	The purpose of the lab or the question to be answered during the lab was erroneous or irrelevant.
Experimental Design	Experimental design is well-constructed test the stated hypothesis. All approporiate controls were included.	Experimental design is adequate to test the hypothesis, but leaves some unanswered questions. Most controls were included.	Experimental design is relevant to the hypothesis, but is not a complete test. Only positive/negative controls were included.	Experimental design is not relevant to the hypothesis. No controls were included..
Materials	All materials and setup used in the experiment are clearly and accurately described.	Almost all materials and the setupu used in the experiment are clearly and accurately described.	Most of the materials and the setup used in the experiment are accurately described.	Many materials are described inaccurately OR are not described at all.
Procedures	Procedures were listed in clear steps. Each step was numbered and was a complete sentence.	Procedures were listed in a logical order, but steps were not numbered and/or were not in complete sentences.	Procedures were listed but were not in a logical order or were difficult to follow.	Procedures did not accurately list the steps of the experiment.

Calculations	All calculations were shown and the results were correct and labeled appropriately.	Some calculations were shown and the results were correct and labeled appropriately.	Some calculations were shown and the results labeled appropriately.	No calculations were shown OR results were inaccurate or mislabeled.

PICCDIn Lab-Notebook Recording

Analysis/Troubleshooting of Results and outcomes	The relationship between the experimentals and methods variables was discussed and trends/patterns logically analyzed to facilitate troubleshooting. Predictions were made about what might happen if part of the lab were changed or how the experimental design could be changed.	The relationship between the variables was discussed and trends/patterns logically analyzed to facilitate troubleshooting.	The relationship between the variables was discussed but no patterns, trends or predictions are made based on the data.	The relationship between the variables was not discussed.
Reproducibility	Procedures appear to be reproducible. Steps were outlined sequentially and are adequately detailed.	Procedures appear to be replicable. Steps were outlined and were adequately detailed.	All steps were outlined, but there is not enough detail to replicate procedures.	Several steps were not outlined AND there is not enough detail to replicate procedures.
Conclusion	Conclusion included whether the findings supported the hypothesis, possible sources of error, and what was learned from the experiment.	Conclusion included whether the findings supported the hypothesis and what was learned from the experiment.	Conclusion includes what was learned from the experiment.	No conclusion was included in the notes OR showed little effort and reflection.

Appearance/Organization (Will another be person be able to replicate experiments independently?)	Lab notes were neatly handwritten and used headings and subheadings to visually organize the material. Extensive tables or where commerical protocols were used were typed/printed.	Lab notes were neatly handwritten and used headings and subheadings to visually organize the material.	Lab notes were neatly written or typed, but formatting did not help visually organize the material.	Lab notes were handwritten and looks sloppy with cross-outs, multiple erasures and/or tears and creases.

Lab_Meeting Evaluation Rubric

Faculty Instructor: **Awdhesh Kalia**

Student Name: _____

CATEGORY	4	3	2	1
Content	Showed a full understanding of the topic. Presentation was logically organized; Raw data figures were clear, labeled, and were shown as obtained; Statitistics are indicated where required; Tables are clear.	Showed a good understanding of the topic. Presentation was logically organized; Raw data figures were clear, labeled, and were shown with minimal post capture processing.	Showed a good understanding of parts of the topic. Presentation was well organized; raw data figures were clear but unlabeled. Digital images were heavily processed to look pretty'.	Did not seem to understand the topic very well. Presentation was all over the place and difficult to follow. Some figures/tables were included and others excluded; most are unlabaled.
Comprehension	Student was able to accurately answer almost all questions posed by classmates/faculty about the topic. Student was well aware of the next steps in the project.	Student was able to accurately answer most questions posed by classmates/faculty about the topic. Students is clear about the next steps in the project.	Student was able to accurately answer a few questions posed by classmates about the topic. Students is aware of some of the next steps in the project.	Student was unable to accurately answer questions posed by classmates about the topic. Students is unaware of what to to next in the projects.
Preparedness	Student was completely prepared and had obviously thought about the organization of the presentatoin.	Student seemsed pretty prepared but required to put it in a little more time to organize the talk.	The student was somewhat prepared, but it is clear that the students did not think about the presentation logic.	Student did not seem at all prepared to present.

Graduate Program in Diagnostic Genetics

Thesis Research Proposal - Evaluation

Does the research project have an IRB approval?

☐ Yes ☐ Expedited ☐ Acquired

☐ In Process ☐ Exempt

Any Evidence of plagiarism in this manuscript.

☐ Yes ☐ No

(If yes, provide evidence; inform the Chairman and the rest of the committee)

QUESTIONNAIRE BEGINS HERE

1. When did you receive a copy of the written manuscript?

4) Two weeks or more before the presentation date
2) At least one week before the presentation date
1) Less than one week

2. Use of Grammar

4) Use correct grammar, sentence structure and spelling throughout the document
2) Occasional errors in grammar, sentence structure or spelling
1) Multiple errors in grammar, sentence structure or spelling [Suggest remediation measures

3. How would you rate the proposal background?

4) Complete leaving little to no questions about the drive behind the study
3) Complete; but needed clarification
2) Incomplete with minor questionable gaps of information
1) Greatly lacking in justifying of the purpose of the study

4. Were the questions to be addressed in the study stated clearly?

4) Question expressed clearly with accompanying hypothesis or rationale
3) Predominantly clear with some clarification needed
2) Vague or inconsistent
1) Ill-defined; no hypothesis or rationale provided

5. Were objectives clearly stated for this project?

4) Defined, simple and directed objectives were stated
3) Over ambitious or too many objectives to be completed in the suggested time frame
2) The idea is present but was poorly stated or unexplained
1) Misunderstood, wrong or incomplete objectives were stated

6. How would you rate the explanation of the proposed methodology?

4) Section provides clear understanding and purpose of each method; potential problems identified and alternative approached listed
3) Section provides clear understanding and purpose of each method; alternatives not considered
2) Can further explain the methods or their purpose to the project
1) Seem to be only a listing of methodology with no clear understanding of its applications

7. How would you rate the student's overall understanding of the proposed research?

4) Fully aware of the study rationale, questions to be addressed, study design and timeline; has a plan to acquire and implement new technology skills;
3) Understands the overall study design and questions; knowledge gaps exist in proposed methodology
2) Understand the overall study design but does not have a plan in place to acquire skills in new technology
0) Unaware and does not understand the purpose of the suggested methods.

8. During the presentation, the student -

4) Took full charge of the presentation
3) Frequently paused and to look at personal notes to proceed to the next point
2) Lost his/her place and needed occasional assistance to get back on track
1) Was led throughout the presentation by questions from the audience

9. When the student was faced with questions from the committee relating to the research proposal

4) The student answered most questions with ease
3) Clearly understands the answers but failed to elaborate
2) Was uncomfortable answering questions and did so with continuous coaching/reassurance
1) Did not have a grasp of the subject and so could not answer most of the questions

10. Did the student understand their specific role in the project and its potential contribution to science (the big picture)?

4) Aware of the role and contribution of the project and its limitations
3) Over- or under- predicted the contribution of the project
2) Has partial grasp on the contribution of the project to the big picture
1) Has no idea

Total Score: _____ (A minimum score of **32/40 = 80%** is required for a PASS grade) ☐ Pass ☐ Fail

COMMENTS:

_____ _____

Committee member signature date

revised 09/05/2018

Rubric for Thesis Manuscript Assessment

UT MD Anderson Cancer Center- SHP Graduate Program in Diagnostic Genetics – Molecular Genetics and Genomics

CRITERIA	Beginner = 1	Basic = 2	Proficient = 3	Mastery = 4
Significance of Topic	Topic is of little importance or unrelated to field of study. Topic will not add to the body of literature in the field of study. Topic has little theoretical or practical importance to the field of study. Topic demonstrates no innovative thinking. Topic does not directly relate to planning, implementing, and evaluating a program.	Topic is of some importance and is related to field of study. Topic will somewhat add to the body of literature in the field of study. Topic had basic theoretical and practical importance to the field of study. Topic demonstrates some innovative thinking. Topic somewhat relates to planning, implementing, and evaluating a program.	Topic is important and related to field of study. Topic will moderately add to the body of literature in the field of study. Topic has moderate theoretical and practical importance to the field of study. Topic demonstrates a moderate level on innovative thinking. Topic directly relates to planning, implementing, and evaluating a program.	Topic of major importance and specifically related to the field of study. Topic has significant theoretical and practical importance to the field of study. Topic demonstrates a high level of innovative thinking. Topic directly relates to planning, implementing, and evaluating a program.
Purpose	Unclear and confusing. No conceptualization.	Somewhat understandable but needs clarity. Some level of conceptualization.	Clearly stated and appropriately worded. Moderately conceptualized.	Clearly stated and appropriately worded. Well conceptualized.
Research Questions/ Hypothesis	Unrelated to purpose and poorly written. Significant revision needed.	Somewhat related to purpose and understandable. Significant revision needed.	Related purpose and understandable. Moderate revision needed.	Clearly related to purpose and understandable. Little or no revision needed.
Review of Literature/ Conceptual Framework	Incomplete or disorganized. Includes an inappropriate number of non-refereed sources. Fails to establish an appropriate theoretical framework (including motivational theories) for the research topic. Fails to site appropriately. Not appropriate for publication or presentation.	Partially complete and somewhat disorganized. Includes few non-refereed sources. Establishes a basic theoretical framework (including motivational theories) for the research topic. Demonstrates a basic understanding of appropriate citation format, but requires significant revision. Is not appropriate for publication or presentation without significant revision.	Complete literature review with sound organization. Includes very few non-referred sources and provides current research relevant to the field and the topic. Establishes a sound and proficient theoretical framework (including motivational theories) for the research topic. May be appropriate for publication or presentation with major or moderate revision.	Comprehensive literature review. Includes current and landmark literature highly relevant to the topic. Establishes an advanced theoretical framework (including motivational theories) for the research topic. Is appropriate for publication or presentation with little or no revision.
Method	Incomplete and little description of methods. Methods appear inappropriate or unrelated to purpose and research questions. Data analysis is incomplete and inappropriate. Not appropriate for publication or presentation.	Partial description of methods which appear to be appropriate and related to purpose and research questions. Data analysis appears appropriate for the research but needs significant refinement. Is not appropriate for publication or presentation without significant revision.	Moderately well written and mostly complete description of methods. Methods appear sound, appropriate and related to purpose and research questions. Data analysis is appropriate for the research but needs some refinement. May be appropriate for publication or presentation with major or moderate revision.	Well written, detailed description of methods. Methods are highly appropriate for this type of project and are directly linked to the purpose and research questions. Data analysis is highly appropriate for the research and needs little or no refinement. Is appropriate for publication or presentation with little or no revision.
Results & Discussion	Inaccurately stated based on the data. No discussion to compare findings to previous research. No relationship to purpose and research questions/hypothesis. Fails to discuss key findings. Shows little or no critical analysis of	Accurately stated based on the data. Limited discussion with some comparison to previous research. Relates material to purpose and research questions/hypothesis. Some discussion of key findings and their implications. Shows some critical analysis of research related to topic and	Accurately stated based on the data. Discussion relates findings to previous research on topic. Discussion relates key findings to previous research and prevents implications. Shows critical analysis of research related to topic and compared to current study. May be	Accurately stated based on the data. Thoughtful, detailed and comprehensive discussion is presented. Key findings are specifically related to previous research. Implications are well presented. Shows creative thinking and thoughtful insight. Shows critical

	research related to topic and compared to current study. Not appropriate for publication or presentation.	compared to current study. Is not appropriate for publication or presentation without significant revision.	appropriate for publication or presentation.	analysis of research related to topic and compared to current study. Is appropriate for publication or presentation with little or no revision.
Format, Citations, & References	Project is disorganized or difficult to read. Project is not presented in format appropriate for intended scholarly venue. Presentation of material is inappropriate and unprofessional. Few appropriate citations are used. Citations and references are not presented in proper format and need significant revision.	Project is somewhat organized but in need of significant clarification. The majority of the project is not presented in format appropriate for intended scholarly venue. Presentation of material is somewhat appropriate and professional. A moderate number of appropriate citations are used, but more may be needed. Citations and references are not presented in proper format, and are in need of moderate revision.	Project is organized, but in need of major clarification in some areas. The majority of the project is presented in format appropriate for intended scholarly venue. Presentation of material is appropriate and professional. A high number of appropriate citations are used, Few, if any, additional sources may be needed. The Majority of citations and references are presented in proper format, and are in need of minor revision.	Project is well organized, needing only very little clarification, if any. The entire project is presented in format appropriate for intended scholarly venue. Presentation of the material is highly appropriate and professional. All citations are appropriate. Additional sources are not needed. All citations and references are presented in proper format and do not need revision.
Overall Content/ Project Evaluation (Readiness to Submit for Publication or Professional Presentation)	Demonstrates lack of knowledge in field of study, the selected topic, and research design. Not appropriate for publication or presentation.	Demonstrates basic level of knowledge in field of study, the selected topic, and research design. Is not appropriate for publication or presentation without significant revision.	Demonstrates a proficient level of knowledge related to field of study, the selected topic, and research design. May be appropriate for publication or presentation with major revision.	Demonstrates a high level of mastery of knowledge related to field of study, the selected topic, and research design. Is appropriate for publication or presentation with little or no revision.
Additional comments to the student:				

Thesis Update Metings (TUMs) Presentation Evaluation Rubric: Grad. Program in Diagnostic Genetics

#1 Presenters Name: _____ **Time:** _____

The talk should be intelligible to the ALL graduate students (including 1st yr) and faculty in the DG program, not merely to a specialist in the area of the talk. These criteria and scales are for your guidance.

Circle one number for each category, with 1 = (low; poor) and 5 = (high;excellent).

Clarity of Background Are the critical observations and problems to be solved clearly identified?	1 2 3 4 5
Experimental Design Are the experiments well designed with adequate controls?	1 2 3 4 5
Experimental Design - II Are problems anticipated and alternative experiments Considered?	1 2 3 4 5
Significance of Research Does the proposed work address an important knowledge gap for the field?	1 2 3 4 5
Presentation of Significance Did the presenter adequately represent the significance of their work?	1 2 3 4 5
Stage Presence Does the presenter have effective stage presence?	1 2 3 4 5
Aesthetics of presentation Are the slides well organized, easy to see and follow?	1 2 3 4 5
Difficulty Is the work technically difficult, challenging?	1 2 3 4 5
Innovation Does the work require substantial creativity and innovation by the presenter?	1 2 3 4 5
Student effort Is it clear that the proposed work will largely be the work of the student?*	1 2 3 4 5
Work proposed for next month? Is the work proposed for next month adequate? potential problems?	1 2 3 4 5
Question Fielding Is the presenter able to answer questions? Do they demonstrate mastery of their field?	1 2 3 4 5
Acknowledgments Was the work of others appropriately acknowledged in the talk? **	1 2 3 4 5
Time*** Did the presenter finish within 15 minutes?	Yes No
Total score:	___ /65

*Students are urged to use "I" when they the work and treat this like a job talk.
**Students are not allowed to spend time on slides listing references/acknowledgements, but are encouraged to indicate important reference material/assistance during the talk itself.
***Timing will be assessed independently at reported to judges. It is considered unfair to take Longer; running over cuts into Question Time. Total presentation time including questions will not exceed 20 minutes.

Comments (areas for improvement, etc):

Evaluator Name	Signature	Date

10. How would you rate the explanation of the proposed data analysis/statistical methods?
    4) Statistics were specific and appropriate for research data.
    3) Statistics were adequate for analysis of research data.
    2) Statistics were questionable for analysis of research data.
    1) Statistics were inappropriate for research data.

11. How would you rate the overall content of the research proposal?
    4) Very good and can explain the purpose of the project without listening to the presentation
    3) Needs few points of clarifications or elaborations
    2) Cannot be used as a stand-alone proposal and require the presence of the author to explain it
    1) Contain logical flaws, major grammatical and spelling errors or conveys little about the project

This section evaluates the oral presentation of the proposal

12. Was the introduction and the literature review sufficient to justify the project?
    4) Literature review followed a logical and timely sequence which the audience can follow
    3) Literature review was sufficient but prompted few clarification questions
    2) The literature review was difficult to follow because the student was not organized
    1) The audience cannot understand the purpose of the project because there was no clear sequence

13. How would you rate the student's understanding of the methodology and analytical tools proposed?
    4) Aware of the methods proposed regardless to experience
    3) Familiar with the proposed methods but shows uncertainty due to lack of experience
    2) Aware but does not understand the purpose of the use of proposed methods
    0) Unaware and does not understand the purpose of the suggested methods.

14. During the presentation, the student
    4) Took full charge of the presentation
    3) Frequently paused and to look at personal notes to proceed to the next point
    2) Lost his/her place and needed occasional assistance to get back on track
    1) Was led throughout the presentation by questions from the audience

15. When the student was faced with questions from the committee relating to the research proposal
    4) The student answered most questions with ease
    3) Clearly understands the answers but failed to elaborate
    2) Was uncomfortable answering questions and did so with continuous coaching/reassurance
    1) Did not have a grasp of the subject and so could not answer most of the questions

16. Did the student understand their specific role in the project and its potential contribution to science (the big picture)?
    4) Aware of the role and contribution of the project and its limitations
    3) Over- or under- predicted the contribution of the project
    2) Has partial grasp on the contribution of the project to the big picture
    1) Clueless

Total Score: _____ (A minimum score of **45 = 80%** is required for a PASS grade) Pass Fail ☐

COMMENTS:

_____ _____
Committee member signature date

Feedback on team dynamics:

1. How effectively did your group work?

2. Were the behaviors of any of your team members particularly valuable or detrimental to the team? Explain.

3. What did you learn about working in a group from this project that you will carry into your next group experience?

Rubric for Teamwork

	PLEASE PICK THE BEHAVIOR THAT BEST REPRESENTS YOUR TEAM"S EXPERIENCE					
Criteria	5	4	3	2	1	Score
Attendance	Most, if not all, members attend all meetings, are punctual, and stay for the entire meeting.		Most members are present at the majority of meetings. When members have to be absent, they inform the team or an agreed upon member of the team.		One or more of the members frequently miss meetings and do not inform the team, or an agreed upon member of the team. When they do come, they are often late or leave early.	1 2 3 4 5 N/A
Establishing and Documenting Goals	When appropriate, realistic, prioritized, and measurable goals are agreed upon and documented and all team members share the common objectives/ purpose.		Individuals share some objectives but a common purpose may be lacking. When appropriate, goals may be established but some may be too general or unquantifiable. Priorities may be unrealistic. Documentation may be incomplete.		Clear goals are not formulated or documented; thus, all members don't accept or understand the purpose/ task of the group.	1 2 3 4 5 N/A
Accountability for Results (Work Products)	The work product is a collective effort; team members have both individual and mutual accountability for the successful completion of their work.		Individuals work on separate sections of the work product and have a coordinator(s) that ties the disparate parts together (i.e., they rely on the sum of each individual's best work).		Individuals work on separate sections of the work product but have no coordinating effort to tie the disparate parts together.	1 2 3 4 5 N/A
Team Cohesion	Team members are committed to the team and show a sense of bonding and camaraderie. A climate of trust and acceptance exists and members feel pride in being part of the team.		Members feel some commitment to the team/group, but it is not consistent. Members' behavior ranges from competitive and individualistic to cooperative and supportive.		Low morale exists; there is little or no cohesion among group members. The team atmosphere is competitive and/or individualistic.	1 2 3 4 5 N/A

Criteria	5	4	3	2	1	Score
Communication	Team members communicate openly and treat one another with respect. All members listen to ideas. The work of each person is acknowledged. Members feel free to seek assistance and information, share resources and insights, provide advice, or ask questions of each other.		There is a general atmosphere of respect for team members, but some members may not be heard as much as others. Some members may not feel free to turn to others for help. Members may avoid discussing some topics for fear of disrupting the group's work and/ or hurting someone's feelings.		Communication is limited among group members (information is not shared with one another and/or important topics are not discussed among the group because a climate of open communication has not been established).	1 2 3 4 5 N/A
Team Decision Making	Clear procedures for making decisions are established and documented, when appropriate. Team members tend to make most decisions through consensus.		Decision-making procedures are established informally, leading to some inconsistency in implementation. Majority and minority opinions sometimes exist when decisions are made by the group.		Decisions are made by individuals and may not reflect the thinking or the desires of the team. There is often a failure to involve all members in the decision-making process.	1 2 3 4 5 N/A
Adjusting	When working to achieve goals, the team is able to adjust plans as needs arise. There is a clear understanding of the nature of mid-course corrections and why they were needed.		The team is not always able to adjust as needed to meet goals. Realization of the need for mid-course corrections sometimes comes too late.		The team is unfocused and seems to be thrashing about. There is no ability to adjust and make corrections.	1 2 3 4 5 N/A
Team Assessment	Members regularly examine how their team is functioning and discuss their findings together for purposes of maintenance or improvement.		Members engage in occasional discussions about how their group is functioning, but it is not a regular occurrence and not all members may be involved.		Members avoid discussions about how they are functioning as a group.	1 2 3 4 5 N/A
Timely Submission of Work Assignments and Reports	Team members are self-motivated and can complete work assignments and reports in a timely manner without being reminded.		Work assignments and reports are submitted but are sometimes late.		Work assignments and reports are frequently late (submitted inconsistently). The team is not self-motivated and needs constant chasing to get the work submitted on time.	1 2 3 4 5 N/A

Criteria	5	4	3	2	1	Score
Leadership	Team members share the leadership role. Each team member feels responsible for helping to lead.		A strong, clearly focused leader develops. This leader sees him/herself more responsible for helping lead the team than the other team members.		The group has no leader nor do its members share the leadership role.	1 2 3 4 5 N/A
Managing Conflict	Conflicts are consistently resolved through open discussion and compromise.		Members are generally able to resolve conflicts through open discussion and compromise.		Conflicts that arise are either not dealt with or cannot be resolved. Members tend to hide their true feelings and opinions.	1 2 3 4 5 N/A

Diagnostic Genetics – Molecular Genetics and Genomics
Student Assessment Criteria – Clinical Laboratory Rotation

Technical checklist and minimal competency are evaluated according to the following criteria:

BMC: performs **B**elow **M**inimal **C**ompetency	The student performed the technique with inconsistent technical skills. The student needed direct supervision with constant and detailed instruction in order to perform the assays or procedure.
PAS: **P**erforms at or **A**bove minimal lab competency **S**tandards	The student performed the task with average or above average technical skill, required minimal supervision, and demonstrates the ability to apply basic principles of the assay or procedure.
OO: **O**bservation **O**nly	The student observed this technique but demonstrated theoretical understanding of the molecular biology fundamental driving the observed technique
NA: **N**ot **A**pplicable	This procedure was not performed in this laboratory.

Technique	BMC	PAS	OO	NA	Comments	Clinical Instructor Initials
Reagent Preparation						
Specimen Handling						
Tissue Preparation						
FFPE						
Blood						
Bone Marrow						
Buccal Swab						
Saliva						
DNA/RNA Isolation (from samples above)						
DNA/RNA isolation from circulating tumor cells						
DNA/RNA isolation circulating cell-free DNA						
DNA/RNA isolation from single cells						
DNA/RNA QA-QC (Circle all that apply)						

Technique	BMC	PAS	OO	NA	Comments	Clinical Instructor Initials
a. Nanodrop b. Qubit c. Agilent Bioanalyzer d. Agilent Tapestation e. Agarose gel electrophoresis						
Restriction Enzyme Digestion a. Cloning b. Mutation detection/mapping						
PCR (Check all that apply a. Reverse Transcription PCR b. Realtime PCR c. Multiplex PCR d. Nested e. Arbitrarily Primed						
Digital PCR – e.g. Biorad QX 200						
DNA Sequencing - Sanger						
Fragment Analysis – Capillary electrophoresis						
Next Generation Sequencing – Platform						
Illumina – HiSeq, MiSeq						
PacBio						
MinIon						
Ion Torrent, Ion PGM,						
NGS Library Prep						
Emulsion-PCR (Ion)						
TruSeq - Illumina						
TruSeq – RNA; Illumina						
Nextera - Tagmentation						
Nextera – Tagmentation Single Cell						
Agilent SureSelect						
Ion AmpliSeq						

Points	1	2	3	4	5	NA
Understands and performs Quality Control procedures. **						
REPORTING RESULTS						
Results are accurate and legible.						
Differentiates between appropriate and inappropriate results.						
Recognizes normal, abnormal and critical values.						
Operates LIS to accurately verify results.						
GENERAL POLICY AND SAFETY PROCEDURE COMPLIANCE						
Possesses working knowledge and acceptance of Hospital and Division policy (dress code, name badges, patient right to privacy).						
Demonstrates working knowledge of safety regulations (reporting fires, exit routes, MSDS book, personal protective equipment, etc.).						
KNOWLEDGE OF ETHICAL PRINCIPLES in GENETIC/GENOMIC APPLICATIONS						
Describes, and is able to discuss, the Genetic Information Nondiscrimination Act (GINA) of 2008						
Demonstrates expertise in the role that federal regulations play in genetic testing						
Describes and discusses the role of FDA in regulation of LDTs						
Describes and applies laws and policies to ensure that individual privacy is respected						
Totals						

Trainer's Assessment: In your opinion, based on your student's performance against other trainees you've had at the same level what grade in % would you give to the student _____

Comments on the student's strengths:

Comments on the student's weaknesses or areas needing improvement:

Student's Signature: _____ Date _____

Instructor's Signature: _____ Date _____

Program Director's Signature: _____ Date _____

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Editorial

Ten Simple Rules for Getting Published

Philip E. Bourne

The student council (http://www.iscbsc.org/) of the International Society for Computational Biology asked me to present my thoughts on getting published in the field of computational biology at the Intelligent Systems in Molecular Biology conference held in Detroit in late June of 2005. Close to 200 bright young souls (and a few not so young) crammed into a small room for what proved to be a wonderful interchange among a group of whom approximately one-half had yet to publish their first paper. The advice I gave that day I have modified and present as ten rules for getting published.

Rule 1: Read many papers, and learn from both the good and the bad work of others.

It is never too early to become a critic. Journal clubs, where you critique a paper as a group, are excellent for having this kind of dialogue. Reading at least two papers a day in detail (not just in your area of research) and thinking about their quality will also help. Being well read has another potential major benefit—it facilitates a more objective view of one's own work. It is too easy after many late nights spent in front of a computer screen and/or laboratory bench to convince yourself that your work is the best invention since sliced bread. More than likely it is not, and your mentor is prone to falling into the same trap, hence rule 2.

Rule 2: The more objective you can be about your work, the better that work will ultimately become.

Alas, some scientists will never be objective about their own work, and will never make the best scientists—learn objectivity early, the editors and reviewers have.

Rule 3: Good editors and reviewers will be objective about your work.

The quality of the editorial board is an early indicator of the review process. Look at the masthead of the journal in which you plan to publish. Outstanding editors demand and get outstanding reviews. Put your energy into improving the quality of the manuscript *before submission*. Ideally, the reviews will improve your paper. But they will not get to imparting that advice if there are fundamental flaws.

Rule 4: If you do not write well in the English language, take lessons early; it will be invaluable later.

This is not just about grammar, but more importantly comprehension. The best papers are those in which complex ideas are expressed in a way that those who are less than immersed in the field can understand. Have you noticed that the most renowned scientists often give the most logical and simply stated yet stimulating lectures? This extends to their written work as well. Note that writing clearly is valuable, even if your ultimate career does not hinge on producing good scientific papers in English language journals. Submitted papers that are not clearly written in good English, unless the science is truly outstanding, are often rejected or at best slow to publish since they require extensive copyediting.

Rule 5: Learn to live with rejection.

A failure to be objective can make rejection harder to take, and you will be rejected. Scientific careers are full of rejection, even for the best scientists. The correct response to a paper being rejected or requiring major revision is to listen to the reviewers and respond in an objective, not subjective, manner. Reviews reflect how your paper is being judged—learn to live with it. If reviewers are unanimous about the poor quality of the paper, move on—in virtually all cases, they are right. If they request a major revision, do it and address every point they raise both in your cover letter and through obvious revisions to the text. Multiple rounds of revision are painful for all those concerned and slow the publishing process.

Rule 6: The ingredients of good science are obvious—novelty of research topic, comprehensive coverage of the relevant literature, good data, good analysis including strong statistical support, and a thought-provoking discussion. The ingredients of good science reporting are obvious—good organization, the appropriate use of tables and figures, the right length, writing to the intended audience—do not ignore the obvious.

Be objective about these ingredients when you review the first draft, and do not rely on your mentor. Get a candid opinion by having the paper read by colleagues without a vested interest in the work, including those not directly involved in the topic area.

Rule 7: Start writing the paper the day you have the idea of what questions to pursue.

Some would argue that this places too much emphasis on publishing, but it could also be argued that it helps define scope and facilitates hypothesis-driven science. The temptation of novice authors is to try to include everything they know in a paper. Your thesis is/was your kitchen sink. Your papers should be concise, and impart as much information as possible in the least number of words. Be familiar with the guide to authors and follow it, the editors and reviewers do. Maintain a good bibliographic database as you go, and read the papers in it.

Citation: Bourne PE (2005) Ten simple rules for getting published. PLoS Comput Biol 1(5): e57.

DOI: 10.1371/journal.pcbi.0010057

Philip E. Bourne is Editor-in-Chief of *PLoS Computational Biology*. E-mail: bourne@sdsc.edu

Rule 8: Become a reviewer early in your career.

Reviewing other papers will help you write better papers. To start, work with your mentors; have them give you papers they are reviewing and do the first cut at the review (most mentors will be happy to do this). Then, go through the final review that gets sent in by your mentor, and where allowed, as is true of this journal, look at the reviews others have written. This will provide an important perspective on the quality of your reviews and, hopefully, allow you to see your own work in a more objective way. You will also come to understand the review process and the quality of reviews, which is an important ingredient in deciding where to send your paper.

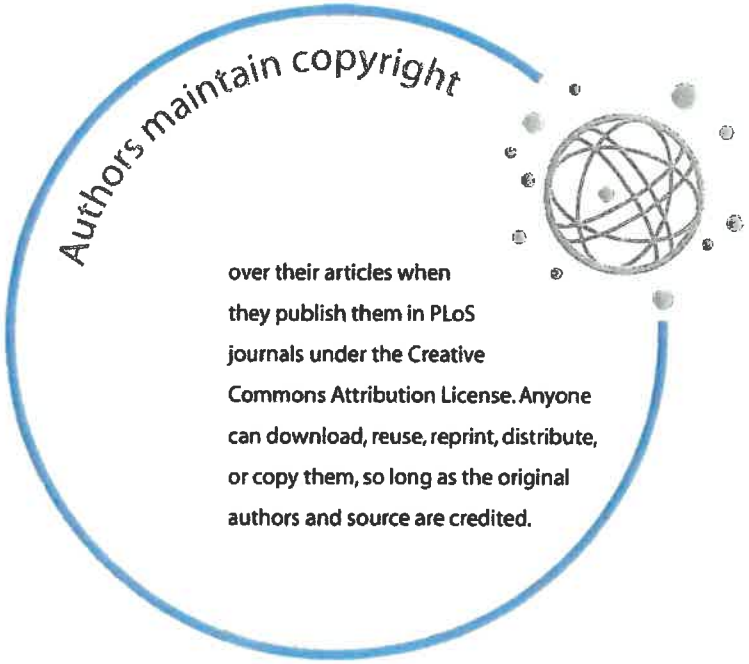
Rule 9: Decide early on where to try to publish your paper.

This will define the form and level of detail and assumed novelty of the work you are doing. Many journals have a presubmission enquiry system available—use it. Even before the paper is written, get a sense of the novelty of the work, and whether a specific journal will be interested.

Rule 10: Quality is everything.

It is better to publish one paper in a quality journal than multiple papers in lesser journals. Increasingly, it is harder to hide the impact of your papers; tools like Google Scholar and the ISI Web of Science are being used by tenure committees and employers to define metrics for the quality of your work. It used to be that just the journal name was used as a metric. In the digital world, everyone knows if a paper has little impact. Try to publish in journals that have high impact factors; chances are your paper will have high impact, too, if accepted.

When you are long gone, your scientific legacy is, in large part, the literature you left behind and the impact it represents. I hope these ten simple rules can help you leave behind something future generations of scientists will admire. ■



Department: Cytogenetic Technology

Degree Program: MS in Diagnostic Genetics

Degree Track: Cytogenetic and Cytogenomic

Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission: To provide the highest quality of didactic and technologically advanced clinical education in Cytogenetic Technology graduating professional practitioners that are valued by cytogenetic diagnostic employers, display precision and accuracy in performing cytogenetic techniques and other related assessment skills, and remain active in the professional community and learning throughout their careers.

Vision: We shall be the premier graduate-level educational program in Diagnostic Genetics by providing innovative curricular, clinical and continuing education services to the University of Texas M.D. Anderson Cancer Center, the state of Texas, and the world.

Goals:

1. Train technologist-scientists proficient in techniques used in contemporary diagnostic cytogenetics and cytogenomics. .
2. Train technologist-scientists with demonstrable evidence of applying cutting edge research methods in developing new tests or insights into disease mechanisms

Program Accreditation: This curriculum conforms to the standards published and monitored by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and technical experience.

Student Learning Outcomes
Program Name: MS in Diagnostic Genetics -Cytogenetic and cytogenomic track

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	Professionalism *Demonstrate professional skills and knowledge during the clinical rotation with respect to the laboratory guidelines*	Clinical Rotation Student Evaluation forms in DG6521 Clinical Rotation 1 course and DG6531 Clinical Rotation II course Narrative: Students are trained in professional skills and knowledge throughout the curriculum in various courses including: DG6530 Clinical Cytogenetic Laboratory Techniques DG6152 Clinical Prenatal Cytogenetics DG6350 Clinical cytogenetics These courses include: Accuracy, awareness and focus. Asks relevant questions and seeks additional information. Follow through with problems by performing routine assigned tasks and completing them through daily and course objectives. To work independently and also a group. Admits to errors or mistakes when made and recognizes limitations. Accepts and applies constructive criticism when confronted. Communicates professionally with other classmates and maintains work quality and quantity.	The students' performance was evaluated based on a 5 point scale. A average score of 3 or above for each student was acceptable. All students had received acceptable result or better .	Students were evaluated by clinical mentors on a 5 point scale with: 1 = Student demonstrates difficulty grasping important functions and tasks in the clinical laboratory. 2 = Student functions inconsistently in the clinical laboratory, with consistent and detailed instruction required achieving acceptable performances. 3 = Student demonstrates acceptable performances with supervision. Requires assistance with evaluation of situations and solutions. 4 = Student demonstrates performance, is careful, and shows adequate attention to detail. Requires minimal supervision. 5 = Student demonstrate performance with above average level of skill. Rarely requires assistance with evaluation of situations and solutions.  DG-CG track Student Rotation Ev	Results of student and the group performances were analyzed and modifications were made based on weaker item which is lower than 3.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 2	Ability to integrate and interpret analytical data, identify errors, and solve problems *Students demonstrate ability to apply G-banding chromosome identification skills, FISH analysis skills, and aCGH techniques to analysis, interpret clinical cases*	Exams, quizzes, competency tests, speed mapping throughout the program. Students are trained in identification of basic G-banded chromosomes throughout the curriculum in various courses including: • DG6120 Intermediate Karyotyping • DG6530 Clinical Cytogenetic Lab Techniques • DG 6152 Clinical Prenatal Cytogenetics • DG6240 Case Studies and abnormal karyotype Methods include : • Chromosome identification practice using KaryoTutor software program. • Digital chromosome mapping on Canvas • Speed mapping normal case series • Abnormalities identification on Canvas • Abnormalities identification on mock exam • Microscope mapping practice and FISH quantitation assignment and case studies • aCGH - hands on workshop with case analysis • Clinical case study	100% of the students demonstrated acceptable performance on chromosome identification, FISH counting and aCGH analysis	• Complete all 4 blocks of practice cases on KaryoTutor software with 100% accuracy • Identify 46 chromosomes with normal morphology within 10 min with 85% of accuracy • Students perform aCGH testing and identify chromosomal abnormality in assigned cases using appropriate software. • Completed FISH signal counting practice and can identify, count abnormal FISH signal pattern in 10 assigned cases with 85% accuracy. • Identify typical derivative chromosome and chromosomal abnormality in 10 assigned cases with more than 75% accuracy. • Correctly interpret 75% assigned clinical cases	The results of each student was reviewed at the end of the academic year of the program and assessed in the advisory meeting. Based on the performance and assessment the adjustments will made and implemented in the beginning of the next cycle.

Outcome 3	Evidence based practice and research. *Students will demonstrate the ability to access, evaluate and apply relevant Cytogenetic and Cytogenomics knowledge to support evidence based health care, disease prevention and discovery.*	Thesis proposal Thesis manuscript Oral thesis defense presentation Narrative: Students were provided with a list of research topics and principal investigators (PI) willing to mentor them for a three semester thesis research. Investigator pool was drawn from MD Anderson, Baylor College of Medicine and Houston Methodist Research Institute. Students sought meetings with investigators whose proposed research topics seemed to mesh with their interest. After the one-on-one meetings students selected one research project in consultation with their SHP academic advisor. Formally, the Thesis research process was structured around three courses: DG6201, Advanced Practice - I DG6701, Advanced Practice – II DG6501 Advanced Practice III Each student was required to independently write a research proposal supervised by their PI; thesis proposal was evaluated via the attached rubric At completion of thesis research, students were required to develop a thesis manuscript, which was evaluated as per the attached rubric At completion of thesis research students were required to defend their thesis work in the form of 30 minute open to public oral presentation	Thesis proposal All students passed the thesis proposal assessment in first try, while adhering to the prescribed deadlines. Thesis manuscript All students submitted an electronic copy of their manuscript while adhering to the prescribed deadlines. Oral presentations All students successfully defended their thesis via oral presentations while adhering to the deadlines.	 Thesis Prelim Eval-Rev-2018.pdf Thesis proposal A minimum of 3 experts in the field and at least 1 DG faculty advisor assess the proposal based on the following rubric and provides suggestions for improvement.  Manuscript assessment rubric -[Thesis manuscript A minimum of 3 experts in the field, and at least 1 DG faculty advisor assesse the students thesis manuscript using the above rubric:  Thesis-Final Defense Evaluation. Thesis defense a minimum of three experts in the field, and at least one faculty advisor from the DG assesses the student's and oral presentation using the above rubric	Thesis proposals and manuscripts 6/6 students wrote manuscripts and proposals that contained grammatical errors or incorrect style or scientific conventions. Students were encouraged to seek advice from professionals from the MD Anderson Scientific Publication Department before final thesis publication (http://inside.mdanderson.org/departments/scipub/educational-programs.html). Students are now encouraged to attend classes, workshops on speaking and writing in English on a regular basis Oral Presentations: It was observed that 70% students scored low (between 2-3) in their oral presentation component especially with reference to questions 14-16 in the "thesis-final-defense" evaluation rubric. To improve student skills during presentation of their thesis work the degree program introduced 'Thesis-Update-Meetings' (TUMs), which are held every last Thursday of each month from September'2018 to May'2019. Each student is required to present their monthly work-in-progress update. And each students is assessed using the appended rubric.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 4	Laboratory safety Student should be able to recognize and apply principles of laboratory safety	Instruction in appropriate specimen collection, transport and storage conditions for each specimen type and testing modality following safety rules throughout the curriculum in various courses including: • DG6530 Clinical Cytogenetic Laboratory Techniques • DG6521 Clinical Rotation 1 course and CC6531 Clinical Rotation II course Methods used including: • Lab safety lab practice and competency testing • MD Anderson annual lab safety training online course • Mock CAP inspection using general lab practice checklist • Safety assessment/evaluation through DG6521 and DG6531 rotation courses	100% of the students passed safety competency test with their first attempt 100% of the students completed online MD Anderson Lab Safety training course and submitted certificate of completion All students satisfied rotation safety requirement at all clinical sites	Students were evaluated on a 5 point scale for the following aspects: • Knowledge and skills in application of safety and governmental regulations and standards as applied to Cytogenetics • Perform and monitor quality control indicators recognizing factors that affect laboratory safety • Safety issues relevant to receive, accession and evaluate for appropriateness of each specimen type • Working knowledge of safety regulations (reporting fires, exit routes, MSDS book, personal protective equipment, etc.)	Relevant feedback from course evaluations, semester individual student conferences were discussed in the program. Deficiencies and possible corrective actions were brought up to the advisory committee meeting for further discussion and approval. BOC results specific to lab safety sub-content area were reviewed for possible improvement in program instruction

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 5	Communication Student should demonstrate the ability to effectively present their experiment results and communicate with peers	All 2nd year DG students were required to present their monthly research progress in front of their peers and instructors and answer related questions in program monthly 'Thesis-Update-Meetings' (TUMs) which are held every last Thursday of each month from September'2018 to May'2019. each students is assessed using the appended rubric. All 2nd year DG students were required to make a poster and present their research result in academic meeting	All students present their poster in professional meeting. All students received 39 of 65 or more in last three TUMs meeting	DG student presentation evaluation rubric.  DG Presentation assessment rubric.p	Students are now encouraged to attend seminar and meeting in MD Anderson Cancer and Baylor College of Medicine and observe how senior scientists present their research

The University of Texas M.D. Anderson Cancer Center
The Program in Cytogenetic Technology
Clinical Rotation
Student Evaluation Form

Name: _____ **Course/Section:** _____

Please, rate the student according to observed technical, cognitive, and affective behaviors. Mark an "X" in one box (1-5) for each task, as applicable. Write "NA" if a task does not apply to the rotation and change the total points accordingly.

Any evaluation with a check in the "F" (1) category for items marked with a star (**) indicates an overall unsatisfactory evaluation regardless of the calculated score.

1= Student demonstrates difficulty grasping important functions and tasks in the clinical laboratory. Consistently performs with errors, demonstrates an unacceptable attitude, or both.
2= Student functions inconsistently in the clinical laboratory, with constant and detailed instruction required achieving acceptable performances.
3= Student demonstrates acceptable performance with supervision. Requires assistance with evaluation of situations and solutions.
4= Student demonstrates performance, is careful, and shows adequate attention to detail. Requires minimal supervision.
5= Student demonstrates performance with above average level of skill. Rarely requires assistance with evaluation of situations and solutions.

Points	1	2	3	4	5	NA
PERSONAL SKILLS						
Arrives at the assigned time prepared for the day's assignment. Informs instructor when leaving the area.						
Is alert and attentive. Asks relevant questions. Seeks additional information. Follows through with problems.						
Performs routine assigned tasks and completes required assignments (i.e., objectives).						
Works as a team member. Seeks unsolicited tasks and helps others as time permits.						
Admits to errors or mistakes when made and recognizes limitations. Accepts and applies constructive criticism when confronted.						
Displays confidence after instruction.						
Communicates professionally with other healthcare personnel.						
Maintains work quality and quantity						

Points	1	2	3	4	5	NA
TECHNICAL SKILLS						
Assesses specimen integrity.						
Describes the theory and principle of the test methodology and/or instrument.						
Performs appropriate tests with ability and accuracy of results.						
Able to operate instrumentation, troubleshoot, and document preventative maintenance as necessary.						
Correctly performs appropriate manual procedures, if necessary.						
Applies knowledge of testing limitations and selects appropriate corrective action for out of limit situations.						
Organizes workflow to make efficient use of time and materials.						
Organizes workflow to make efficient use of time and materials.						
Maintains required documents for regulatory compliance.						
Understands and performs Quality Control procedures. **						
REPORTING RESULTS						
Results are accurate and legible.						
Differentiates between appropriate and inappropriate results.						
Recognizes normal, abnormal and critical values.						
Operates LIS to accurately verify results.						
GENERAL POLICY AND SAFETY PROCEDURE COMPLIANCE						
Possesses working knowledge and acceptance of Hospital and Division policy (dress code, name badges, patient right to privacy).						
Demonstrates working knowledge of safety regulations (reporting fires, exit routes, MSDS book, personal protective equipment, etc.).						
Totals						

Trainer's Assessment: In your opinion, based on your student's performance, what grade in % would you give to the student _____

Comments on the student's strengths:

Comments on the student's weaknesses or areas needing improvement:

Student's Signature: _____ **Date** _____

Instructor's Signature: _____ **Date** _____

Program Director's Signature: _____ **Date** _____

Graduate Program in Diagnostic Genetics

Thesis Research Proposal - Evaluation

Does the research project have an IRB approval?

☐ Yes ☐ Expedited ☐ Acquired

☐ In Process ☐ Exempt

Any Evidence of plagiarism in this manuscript.

☐ Yes ☐ No

(If yes, provide evidence; inform the Chairman and the rest of the committee)

QUESTIONNAIRE BEGINS HERE

1. When did you receive a copy of the written manuscript?

4) Two weeks or more before the presentation date
2) At least one week before the presentation date
1) Less than one week

2. Use of Grammar

4) Use correct grammar, sentence structure and spelling throughout the document
2) Occasional errors in grammar, sentence structure or spelling
1) Multiple errors in grammar, sentence structure or spelling [Suggest remediation measures

3. How would you rate the proposal background?

4) Complete leaving little to no questions about the drive behind the study
3) Complete; but needed clarification
2) Incomplete with minor questionable gaps of information
1) Greatly lacking in justifying of the purpose of the study

4. Were the questions to be addressed in the study stated clearly?

4) Question expressed clearly with accompanying hypothesis or rationale
3) Predominantly clear with some clarification needed
2) Vague or inconsistent
1) Ill-defined; no hypothesis or rationale provided

5. Were objectives clearly stated for this project?

4) Defined, simple and directed objectives were stated
3) Over ambitious or too many objectives to be completed in the suggested time frame
2) The idea is present but was poorly stated or unexplained
1) Misunderstood, wrong or incomplete objectives were stated

6. How would you rate the explanation of the proposed methodology?

4) Section provides clear understanding and purpose of each method; potential problems identified and alternative approached listed
3) Section provides clear understanding and purpose of each method; alternatives not considered
2) Can further explain the methods or their purpose to the project
1) Seem to be only a listing of methodology with no clear understanding of its applications

7. How would you rate the student's overall understanding of the proposed research?

4) Fully aware of the study rationale, questions to be addressed, study design and timeline; has a plan to acquire and implement new technology skills;
3) Understands the overall study design and questions; knowledge gaps exist in proposed methodology
2) Understand the overall study design but does not have a plan in place to acquire skills in new technology
0) Unaware and does not understand the purpose of the suggested methods.

8. During the presentation, the student -

4) Took full charge of the presentation
3) Frequently paused and to look at personal notes to proceed to the next point
2) Lost his/her place and needed occasional assistance to get back on track
1) Was led throughout the presentation by questions from the audience

9. When the student was faced with questions from the committee relating to the research proposal

4) The student answered most questions with ease
3) Clearly understands the answers but failed to elaborate
2) Was uncomfortable answering questions and did so with continuous coaching/reassurance
1) Did not have a grasp of the subject and so could not answer most of the questions

10. Did the student understand their specific role in the project and its potential contribution to science (the big picture)?

4) Aware of the role and contribution of the project and its limitations
3) Over- or under- predicted the contribution of the project
2) Has partial grasp on the contribution of the project to the big picture
1) Has no idea

Total Score: _____ (A minimum score of **32/40 = 80%** is required for a PASS grade) ☐ Pass ☐ Fail

COMMENTS:

_____ _____

Committee member signature date

revised 09/05/2018

Rubric for Thesis Manuscript Assessment

UT MD Anderson Cancer Center- SHP Graduate Program in Diagnostic Genetics – Molecular Genetics and Genomics

CRITERIA	Beginner = 1	Basic = 2	Proficient = 3	Mastery = 4
Significance of Topic	Topic is of little importance or unrelated to field of study. Topic will not add to the body of literature in the field of study. Topic has little theoretical or practical importance to the field of study. Topic demonstrates no innovative thinking. Topic does not directly relate to planning, implementing, and evaluating a program.	Topic is of some importance and is related to field of study. Topic will somewhat add to the body of literature in the field of study. Topic had basic theoretical and practical importance to the field of study. Topic demonstrates some innovative thinking. Topic somewhat relates to planning, implementing, and evaluating a program.	Topic is important and related to field of study. Topic will moderately add to the body of literature in the field of study. Topic has moderate theoretical and practical importance to the field of study. Topic demonstrates a moderate level on innovative thinking. Topic directly relates to planning, implementing, and evaluating a program.	Topic of major importance and specifically related to the field of study. Topic has significant theoretical and practical importance to the field of study. Topic demonstrates a high level of innovative thinking. Topic directly relates to planning, implementing, and evaluating a program.
Purpose	Unclear and confusing. No conceptualization.	Somewhat understandable but needs clarity. Some level of conceptualization.	Clearly stated and appropriately worded. Moderately conceptualized.	Clearly stated and appropriately worded. Well conceptualized.
Research Questions/ Hypothesis	Unrelated to purpose and poorly written. Significant revision needed.	Somewhat related to purpose and understandable. Significant revision needed.	Related purpose and understandable. Moderate revision needed.	Clearly related to purpose and understandable. Little or no revision needed.
Review of Literature/ Conceptual Framework	Incomplete or disorganized. Includes an inappropriate number of non-refereed sources. Fails to establish an appropriate theoretical framework (including motivational theories) for the research topic. Fails to site appropriately. Not appropriate for publication or presentation.	Partially complete and somewhat disorganized. Includes few non-refereed sources. Establishes a basic theoretical framework (including motivational theories) for the research topic. Demonstrates a basic understanding of appropriate citation format, but requires significant revision. Is not appropriate for publication or presentation without significant revision.	Complete literature review with sound organization. Includes very few non-referred sources and provides current research relevant to the field and the topic. Establishes a sound and proficient theoretical framework (including motivational theories) for the research topic. May be appropriate for publication or presentation with major or moderate revision.	Comprehensive literature review. Includes current and landmark literature highly relevant to the topic. Establishes an advanced theoretical framework (including motivational theories) for the research topic. Is appropriate for publication or presentation with little or no revision.
Method	Incomplete and little description of methods. Methods appear inappropriate or unrelated to purpose and research questions. Data analysis is incomplete and inappropriate. Not appropriate for publication or presentation.	Partial description of methods which appear to be appropriate and related to purpose and research questions. Data analysis appears appropriate for the research but needs significant refinement. Is not appropriate for publication or presentation without significant revision.	Moderately well written and mostly complete description of methods. Methods appear sound, appropriate and related to purpose and research questions. Data analysis is appropriate for the research but needs some refinement. May be appropriate for publication or presentation with major or moderate revision.	Well written, detailed description of methods. Methods are highly appropriate for this type of project and are directly linked to the purpose and research questions. Data analysis is highly appropriate for the research and needs little or no refinement. Is appropriate for publication or presentation with little or no revision.
Results & Discussion	Inaccurately stated based on the data. No discussion to compare findings to previous research. No relationship to purpose and research questions/hypothesis. Fails to discuss key findings. Shows little or no critical analysis of	Accurately stated based on the data. Limited discussion with some comparison to previous research. Relates material to purpose and research questions/hypothesis. Some discussion of key findings and their implications. Shows some critical analysis of research related to topic and	Accurately stated based on the data. Discussion relates findings to previous research on topic. Discussion relates key findings to previous research and prevents implications. Shows critical analysis of research related to topic and compared to current study. May be	Accurately stated based on the data. Thoughtful, detailed and comprehensive discussion is presented. Key findings are specifically related to previous research. Implications are well presented. Shows creative thinking and thoughtful insight. Shows critical

	research related to topic and compared to current study. Not appropriate for publication or presentation.	compared to current study. Is not appropriate for publication or presentation without significant revision.	appropriate for publication or presentation.	analysis of research related to topic and compared to current study. Is appropriate for publication or presentation with little or no revision.
Format, Citations, & References	Project is disorganized or difficult to read. Project is not presented in format appropriate for intended scholarly venue. Presentation of material is inappropriate and unprofessional. Few appropriate citations are used. Citations and references are not presented in proper format and need significant revision.	Project is somewhat organized but in need of significant clarification. The majority of the project is not presented in format appropriate for intended scholarly venue. Presentation of material is somewhat appropriate and professional. A moderate number of appropriate citations are used, but more may be needed. Citations and references are not presented in proper format, and are in need of moderate revision.	Project is organized, but in need of major clarification in some areas. The majority of the project is presented in format appropriate for intended scholarly venue. Presentation of material is appropriate and professional. A high number of appropriate citations are used, Few, if any, additional sources may be needed. The Majority of citations and references are presented in proper format, and are in need of minor revision.	Project is well organized, needing only very little clarification, if any. The entire project is presented in format appropriate for intended scholarly venue. Presentation of the material is highly appropriate and professional. All citations are appropriate. Additional sources are not needed. All citations and references are presented in proper format and do not need revision.
Overall Content/ Project Evaluation (Readiness to Submit for Publication or Professional Presentation)	Demonstrates lack of knowledge in field of study, the selected topic, and research design. Not appropriate for publication or presentation.	Demonstrates basic level of knowledge in field of study, the selected topic, and research design. Is not appropriate for publication or presentation without significant revision.	Demonstrates a proficient level of knowledge related to field of study, the selected topic, and research design. May be appropriate for publication or presentation with major revision.	Demonstrates a high level of mastery of knowledge related to field of study, the selected topic, and research design. Is appropriate for publication or presentation with little or no revision.
Additional comments to the student:				

Diagnostic Genetics Program

Master's Research Project Final Defense Evaluation (To be completed by the research project committee members only)

1. When did you receive a copy of the written manuscript?
   - 4) Two weeks or more before the presentation date
   - 2) At least one week before the presentation date
   - 1) Less than one week

2. Does the research project have an IRB approval?

x	Yes	☐	Expedited	☐	Acquired
☐	In Process	☐	Exempt		

3. Plagiarism was evident in this manuscript.

Yes xNo

(If yes, provide evidence; inform the Chairman and the rest of the committee)

This section evaluates the written proposal

4. Did the submitted manuscript follow the APA formatting guidelines?
   - 4) Yes
   - 2) Needs improvement
   - 1) No

5. Use of Grammar
   - 4) Use correct grammar, sentence structure and spelling throughout the document
   - 2) Occasional errors in grammar, sentence structure or spelling
   - 1) Multiple errors in grammar, sentence structure or spelling

6. How would you rate the literature review?
   - 4) Complete leaving little to no questions about the drive behind the study
   - 3) Complete but included irrelevant article reviews
   - 2) Incomplete with minor questionable gaps of information
   - 1) Greatly lacking in justifying of the purpose of the study

7. Was the hypothesis stated clearly?
   - 4) Expresses a clear, coherent thesis statement
   - 3) Predominantly clear with one minor correction
   - 2) Vague or inconsistent statement of purpose
   - 1) Ill-defined or no thesis or statement of purpose

8. Were clear objectives stated for this project?
   - 4) Defined, simple and directed objectives were stated
   - 3) Over ambitious or too many objectives to be completed in the suggested time frame
   - 2) The idea is present but was poorly stated or unexplained
   - 1) Misunderstood, wrong or incomplete objectives were stated

9. How would you rate the explanation of the proposed methodology?
   - 4) Simplified and contained all needed components to give clear understanding and purpose of each method
   - 3) Too much detail and overwhelming to the audience
   - 2) Can further explain the methods or their purpose to the project
   - 1) Seem to be only a listing of methodology with no clear understanding of its applications

10. How would you rate the explanation of the proposed data analysis/statistical methods?
    4) Statistics were specific and appropriate for research data.
    3) Statistics were adequate for analysis of research data.
    2) Statistics were questionable for analysis of research data.
    1) Statistics were inappropriate for research data.

11. How would you rate the overall content of the research proposal?
    4) Very good and can explain the purpose of the project without listening to the presentation
    3) Needs few points of clarifications or elaborations
    2) Cannot be used as a stand-alone proposal and require the presence of the author to explain it
    1) Contain logical flaws, major grammatical and spelling errors or conveys little about the project

This section evaluates the oral presentation of the proposal

12. Was the introduction and the literature review sufficient to justify the project?
    4) Literature review followed a logical and timely sequence which the audience can follow
    3) Literature review was sufficient but prompted few clarification questions
    2) The literature review was difficult to follow because the student was not organized
    1) The audience cannot understand the purpose of the project because there was no clear sequence

13. How would you rate the student's understanding of the methodology and analytical tools proposed?
    4) Aware of the methods proposed regardless to experience
    3) Familiar with the proposed methods but shows uncertainty due to lack of experience
    2) Aware but does not understand the purpose of the use of proposed methods
    0) Unaware and does not understand the purpose of the suggested methods.

14. During the presentation, the student
    4) Took full charge of the presentation
    3) Frequently paused and to look at personal notes to proceed to the next point
    2) Lost his/her place and needed occasional assistance to get back on track
    1) Was led throughout the presentation by questions from the audience

15. When the student was faced with questions from the committee relating to the research proposal
    4) The student answered most questions with ease
    3) Clearly understands the answers but failed to elaborate
    2) Was uncomfortable answering questions and did so with continuous coaching/reassurance
    1) Did not have a grasp of the subject and so could not answer most of the questions

16. Did the student understand their specific role in the project and its potential contribution to science (the big picture)?
    4) Aware of the role and contribution of the project and its limitations
    3) Over- or under- predicted the contribution of the project
    2) Has partial grasp on the contribution of the project to the big picture
    1) Clueless

Total Score: _____ (A minimum score of **45 = 80%** is required for a PASS grade) Pass Fail ☐

COMMENTS:

_____ _____
Committee member signature date

Thesis Update Metings (TUMs) Presentation Evaluation Rubric: Grad. Program in Diagnostic Genetics

#1 Presenters Name: _____ Time: _____

The talk should be intelligible to the ALL graduate students (including 1st yr) and faculty in the DG program, not merely to a specialist in the area of the talk. These criteria and scales are for your guidance.

Circle one number for each category, with 1 = (low; poor) and 5 = (high;excellent).

Clarity of Background Are the critical observations and problems to be solved clearly identified?	1 2 3 4 5
Experimental Design Are the experiments well designed with adequate controls?	1 2 3 4 5
Experimental Design - II Are problems anticipated and alternative experiments Considered?	1 2 3 4 5
Significance of Research Does the proposed work address an important knowledge gap for the field?	1 2 3 4 5
Presentation of Significance Did the presenter adequately represent the significance of their work?	1 2 3 4 5
Stage Presence Does the presenter have effective stage presence?	1 2 3 4 5
Aesthetics of presentation Are the slides well organized, easy to see and follow?	1 2 3 4 5
Difficulty Is the work technically difficult, challenging?	1 2 3 4 5
Innovation Does the work require substantial creativity and innovation by the presenter?	1 2 3 4 5
Student effort Is it clear that the proposed work will largely be the work of the student?*	1 2 3 4 5
Work proposed for next month? Is the work proposed for next month adequate? potential problems?	1 2 3 4 5
Question Fielding Is the presenter able to answer questions? Do they demonstrate mastery of their field?	1 2 3 4 5
Acknowledgments Was the work of others appropriately acknowledged in the talk? **	1 2 3 4 5
Time*** Did the presenter finish within 15 minutes?	Yes No
Total score:	___ /65

Comments (areas for improvement, etc):

Evaluator Name	Signature	Date

QEP 2021 Institutional Effectiveness Review Summary

Instructions- The following will serve to document our ongoing review and analysis of institutional effectiveness data to support the development of our 2021 Quality Enhancement Project. Please complete and return by December 14, 2018. This document will be included in our QEP Report.

Program- (check your program)

B.S. Programs

_____ Clinical Laboratory Sciences
_____ Cytogenetic Technology
_____ Cytotechnology
_____ Diagnostic Imaging
_____ Histotechnology
_____ Medical Dosimetry
_____ Molecular Genetic Technology
√ Radiation Therapy

M.S. Programs

_____ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- (check the agency that applies to your program)

_____ **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**
√ Joint Review Committee on Education in Radiologic Technology (JRCERT)
_____ **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**

Program Director (initial next to your name)

_____ Mark Bailey
√Shaun Caldwell
_____ Dr. Mahsa Dehganpour
_____ Dr. Jun Gu
_____ Dr. Brandy Greenhill
_____ Dr. Peter Hu
_____ Dr. William Undie

Student Enrollment (indicate the enrollment for each year below)

2018-2019 **25** students
2017-2018 **25** students

Data Reviewed (check all that apply)

- √ Program Self Study
- √ QEP 2010 Program Summary Report
- √ Certification Exam Results
- √ Employer Survey
- √ Student Course Survey
- √ Curriculum Committee Meeting Minutes
- √ Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

- Student enter the program with a clear understanding of the profession and the program expectations
- Students are adaptable and possess a desire to treat patients accurately and with dignity
- Work independent and in teams
- Demonstrate continued development of clinical and critical thinking skills
- Accept responsibility and demonstrate maturity and professionalism

Current Program strengths (reference reviewed data, bullet points are acceptable)

- Clinical Education of variety, volume and advanced techniques
- Faculty who are committed to help students succeed
- High retention rate
- High job placement rate
- High registration and licensure rates
- Strong support from the Division of Radiation Oncology and affiliate sites

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

- Master's Degree in Advanced Practice Radiation Therapy: Dual certification, advanced patient care, and advanced treatment competency
- Reevaluate the curriculum map of the undergraduate radiation therapy program

QEP project that would benefit your students (select **one**)

- √ Interprofessional Education
- _____ Competency Based Education
- _____ Ethics
- _____ Other (please specify)_____

Student Learning Outcomes
Radiation Therapy Program

Department: Radiation Therapy

Degree Program: BS in Radiation Therapy

Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission: The mission of the Radiation Therapy Program is to provide the highest quality of education to radiation therapy students through formal didactic and state-of-the-art clinical experiences that prepare the student to deliver superior patient care and treatment in all aspects of radiation therapy.

Vision: We shall be the premier provider of education for radiation therapy professionals based on best practices and research in radiation oncology.

Goals: Students will be clinically competent, critical thinkers, effective communicators and demonstrate professionalism.

Program Accreditation: This curriculum conforms to the standards published and monitored by the Joint Review Committee on Education in Radiologic Technology (JRCERT). During their 3-semester year in the program the students will receive classroom lectures, laboratory demonstrations and technical experience.

Student Learning Outcomes
Radiation Therapy Program

Program Name: Radiation Therapy Program	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1 Clinical Competency	Consistency/ Efficiency of Daily Technical Performance	Treatment Unit Professional Growth Assessment --Item # 2	Semester 2: 100%= 1/21 90-99%= 10/21 80-89%= 10/21 <80%=0 Semester 5: 100%= 3/21 90-99%= 16/21 80-89%= 2/21 <80%= 1/21 (Semester 2= 83% Semester 5= 69%) 76% (16/21) students demonstrated improvement in comparison of Semester 2 and Semester 5	**Item #3: Consistency/Efficiency of Daily Technical Performance** The following is the criteria used for individual student assessment. Never = <79% of the time; Occasionally = 85-90% of the time; Usually = 90-95% of the time; Always = 95-100% of the time Always dependable; maintains high consistency/ efficiency in the performance of daily clinical tasks Usually dependable; maintains a fairly stable performance of tasks each day in clinic Occasionally difficult to depend on in the performance of daily clinical tasks; not always consistent/ efficient Never consistent from one day to the next in the performance of tasks; unreliable as a member of the team	Students were required to review each Treatment Unit Professional Growth Assessment and acknowledge/respond to the assessment. During Mid-Semester Advising each student was reminded of their performance at that point in the semester. Students were offered tutoring and advice on improvement. Students were reminded they may request a formal/non-graded assessment at mid-semester to identify how to improve for final grading. 6 students did not demonstrate improvement. Evaluations of students in semester 2 are more liberal compared to semester 5 as students are expected to perform more effectively as they progress in the program and gain clinical experience. Student 1 Semester 2 83% Semester 5 69% This student was identified as having significant language and cultural difficulties. Student was offered extensive remediation by clinical coordinator. Student was formally evaluated through direct observation. Student #2 Semester 2 100% Semester 5 91% Although the students' scores are impressive, the student was advised. It was noted in semester 2 the student was graded more liberally due to inexperience however in semester 5 the student should have performed at a more advanced level. Student was provided remediation assignments. Semester VI evaluation demonstrated a slight improvement. Student #3

					Semester 2 96% Semester 5 93% Student was advised and noted ways to improve Student #4 Semester 2 96% Semester 5 92% Student was advised and noted ways to improve. Student #5 Semester 2 92% Semester 5 89% Student was advised and noted ways to improve.
Outcome 2 Clinical Competency	Technical Accuracy (Demonstrate reproduction of the patient's initial setup.)	Treatment Unit Professional Growth Assessment --Item #3	Semester 2: 100%= 1/21 90-99%= 10/21 80-89%= 10/21 <80%=0 Semester 5: 100%= 1/21 90-99%= 18/21 80-89%= 1/21 <80%= 1/21 (69%) 86% (18/21) students demonstrated improvement in comparison of Semester 2 and Semester 5	Treatment Unit Professional Growth Assessments are conducted every semester through direct observation and evaluation by clinical instructors. Formal assessment reporting is identified in semester 3 and semester 5. Improvement is expected to correlate to student improvement as they successfully complete didactic and clinical course work. Students participate in a formal patient care course in semester 1. Patient assessment and care are demonstrated each semester in Clinical Education I-VI. Additionally, concepts are reenforced in Technical Radiation Oncology, Simulation and Treatment I and II The following is the criteria used for individual student assessment. Never = <79% of the time; Occasionally = 85-90% of the time; Usually = 90-95% of the time; Always = 95-100% of the time **Item# 2: Technical Accuracy** Always accurate; little help needed Usually accurate; few mistakes; quick to learn	Students were required to review each Treatment Unit Professional Growth Assessment and acknowledge/respond to the assessment. During Mid-Semester Advising each student was reminded of their performance at that point in the semester. Students were offered tutoring or advice on improvement. Students were reminded they may request a formal/non-graded assessment at mid-semester to identify how to improve for final grading. 3 students did not meet the benchmark. Student 1 Semester 2 83% Semester 5 69% This student was identified as having significant language and cultural difficulties. Student was offered extensive remediation by clinical coordinator. Student was formally evaluated through observed by the Clinical Coordinator and numerous assignments and one-one-tutoring was provided. Additionally, extended clinical rotations were made at linear accelerators that were conducive to the student's learning needs. Student's score improved dramatically semester VI and student was successful in graduating and passing the national certification examination. Student #2 Semester 2 100% Semester 5 92% Although the students scores are impressive, the student

				Occasionally accurate; often needs correction Never accurate; needs constant correction; poor skills despite repetition	was advised. It was noted in semester 2 the student was graded more liberally due to inexperience however in semester 5 the student should have performed at a more advanced level. Student was provided remediation assignments. Semester VI evaluation demonstrated a slight improvement. Student#3 Semester 2 97% Semester 5 96% Student was advised and noted ways to improve
Outcome 3 Critical Thinking	Recognize discrepancies in treatment.	Professional Growth Assessment -Item #10	Semester 2: 100%= 1/21 90-99%= 15/21 80-89%= 5/21 <80%=0 Semester 5: 100%= 3/21 90-99%= 16/21 80-89%= 1/21 <80%= 1/21 (69%) 67% (14/21) students demonstrated improvement in comparison of Semester 2 and Semester 5	Treatment Unit Professional Growth Assessments are conducted every semester through direct observation and evaluation by clinical instructors. Formal assessment reporting is identified in semester 3 and semester 5. Improvement is expected to correlate to student improvement as they successfully complete didactic and clinical course work. Students participate in a formal critical thinking assignments throughout the program. Students practice skills in recognizing discrepancies in treatment in the formal didactic courses: Simulation and Treatment I and II, Radiation Therapy Physics, Treatment Planning and Dosimetry, Special Applications Additionally, specific assignment have been identified in Research Techniques in Radiologic Sciences taught during Semester IV. These assignments directly correlate to the definition of critical thinking defined by the CAT assessment. Assignments include: interpretation data, separating facts from inference, identifying bias, identifying inappropriate conclusions and understanding limitations of correlational data. The following is the criteria used for individual student assessment.	Radiation Therapy Physics, Treatment Planning and Dosimetry and Special Applications are intense courses that require a strong foundation in treatment and mathematics. It is a trend that students find these courses challenging especially if they are weak in math. Students demonstrate treatment planning skills during a Dosimetry clinical rotation and in the didactic courses: Treatment Planning and Dosimetry and Special Applications. It was noted in semester 2 the students were graded more liberally due to inexperience however in semester 5 the student should have performed at a more advanced level. 7 students did not show improvement in comparison of semester 2 and semester 5. 5 of the 7 students showed a drop in scoring less than 3%. 2 students demonstrated a drop in score more than 3% All 7 students attended tutorial sessions for Radiation Therapy Physics and Treatment Planning and Dosimetry. Student #1 Semester 2= 88% Semester 5: 69% Student attended group tutoring sessions and received one-on-one instruction. Student successfully passed all courses. The student passed the certification examination on the second attempt.

				Never = <79% of the time; Occasionally = 85-90% of the time; Usually = 90-95% of the time; Always = 95-100% of the time **Problem Solving/ Critical Thinking** Always shows ability to identify and assess problems in routine/ non-routine procedures or emergencies with actions resulting in a positive outcome Usually shows ability to identify and assess problems in routine/ non-routine procedures or emergencies with actions resulting in a positive outcome Never shows ability to identify and assess problems in routine/ non-routine procedures or emergencies with actions resulting in a positive outcome	Student #2 Semester 2= 92% Semester 5= 87% Student attended group tutoring sessions and received one-on-one instruction. Student successfully passed all courses. The student passed the certification examination on the fourth attempt.
Outcome 4 Communication	Patient/Staff Communication Skills	Treatment Unit Professional Growth Assessment --Item # 9	Semester 2: 100%= 6/21 90-99%= 14/21 80-89%= 1/21 <80%=0 Semester 5: 100%= 9/21 90-99%= 1/21 80-89%= 1/21 <80%= 1/21 (69%) 71% (15/21) students demonstrated improvement in comparison of Semester 2 and Semester 5	Treatment Unit Professional Growth Assessments are conducted every semester through direct observation and evaluation by clinical instructors. Formal assessment reporting is identified in semester 3 and semester 5. Improvement is expected to correlate to student improvement as they successfully complete didactic and clinical course work. Students participate in formal critical patient/staff communication assignments throughout the program. The following formal didactic courses include communication assignments: Patient Care in Radiation Therapy, Simulation and Treatment Techniques I and II , Technical Radiation Oncology and Clinical Education I-VI The following is the criteria used for individual student assessment.	It was noted in semester 2 the students were graded more liberally due to inexperience however in semester 5 the student should have performed at a more advanced level. 6 students did not show improvement in comparison of semester 2 and semester 5. 4 of the 6 students showed a drop in scoring less than 3%. Students received advising and identified ways to better communicate with staff and patients. Further investigation concluded that patients were not being given incorrect information. Most communication issues were with staff and non-patient related. 2 students demonstrated a drop in score more than 3% Student #1 Semester 2- 88% Semester 5= 69% This student was identified as having significant language and cultural difficulties. Student was offered extensive remediation by clinical coordinator. Student was formally evaluated through direct observation. Student demonstrated improvement in Semester VI.

				Never = <79% of the time; Occasionally = 85-90% of the time; Usually = 90-95% of the time; Always = 95-100% of the time **Patient/Staff Communication Skills** Always relays information appropriately and accurately; respects patient confidentiality Usually transmits pertinent information with little or no prompting Occasionally transmits pertinent information when prompted; has trouble speaking to or is occasionally inappropriate in front of patients Never communicates necessary information; does not communicate with patients or staff; is inappropriate in front of patients	Student #2 Semester 2=100% Semester 5-=93% Although these score are acceptable, the student was advised that they needed to communicate clearly days in which they could not attend clinical education. Student was reminded of the policy to contact the School and the clinical instructor/treatment unit when missing clinical education.
Outcome 5 Demonstrate Professionalism	Accept instruction, discipline, correction, guidance and direction	Treatment Unit Professional Growth Assessment --Item #11	Semester 2: 100%= 14/21 90-99%= 6/21 80-89%= 0/21 <80%=1 (70%) Semester 5: 100%= 17/21 90-99%= 2/21 80-89%= 2/21 <80%= 0 81% (17/21) students demonstrated improvement in comparison of Semester 2 and Semester 5	**Accepts Constructive Criticism** The following is the criteria used for individual student assessment. Never = <79% of the time; Occasionally = 85-90% of the time; Usually = 90-95% of the time; Always = 95-100% of the time Always utilizes criticism constructively without hostility and learns from experience Usually accepts constructive criticism without becoming defensive or argumentative; learns from experience Occasionally accepts constructive criticism grudgingly; some hostility and argument; may need counseling Never accepts constructive criticism; is defensive and demonstrates hostility; needs counseling	Although the majority of students demonstrated improvement, the following actions were taken. Student Advising was conducted at mid-semester. Students not demonstrating progress were individually advised by their respective clinical coordinator. Student #1 Semester 2= 70% Semester 5= 100% Student was advised and monitored. Student demonstrated significant improvement in attitude and seriousness of accepting constructive criticism. The 4 students who did not demonstrate improvement were advised and their scores were improved in semester VI.

QEP 2021 Institutional Effectiveness Review Summary

Instructions- The following will serve to document our ongoing review and analysis of institutional effectiveness data to support the development of our 2021 Quality Enhancement Project. Please complete and return by December 14, 2018. This document will be included in our QEP Report.

Program- (check your program)

B.S. Programs

_____ Clinical Laboratory Sciences
_____ Cytogenetic Technology
_____ Cytotechnology
_____ Diagnostic Imaging
_____ Histotechnology
_____ Medical Dosimetry
_____ Molecular Genetic Technology
_____ Radiation Therapy
√ Health Care Disparities, Diversity and Advocacy

M.S. Programs

_____ Diagnostic Genetics

Other Programs

_____ _____

Accrediting Agency- (check the agency that applies to your program)

_____ Commission on Accreditation of Allied Health Education Programs (CAAHEP)
_____ Joint Review Committee on Education in Radiologic Technology (JRCERT)
_____ National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)
Not Applicable

Program Director (initial next to your name)

_____ Mark Bailey
√ Shaun Caldwell
_____ Dr. Mahsa Dehganpour
_____ Dr. Jun Gu
_____ Dr. Brandy Greenhill
_____ Dr. Peter Hu
_____ Dr. William Undie

Student Enrollment (indicate the enrollment for each year below)

2018-2019	13 students
2017-2018	20 students

Data Reviewed (check all that apply)

	Program Self Study
√	QEP 2010 Program Summary Report
	Certification Exam Results
	Employer Survey
√	Student Course Survey
√	Curriculum Committee Meeting Minutes
	Student Learning Outcome (5 column report)

Current student strengths (reference reviewed data, bullet points are acceptable)

- Mature, experienced students
- Focused on learning
- Professional goal oriented

Current Program strengths (reference reviewed data, bullet points are acceptable)

- First of its type in the country
- Hybrid delivery for working adults
- Variety of specialized faculty

What areas have you targeted for future program development? (reference reviewed data, bullet points are acceptable)

- Continued curricular development
- Improving online delivery and testing
- Implement of program effectiveness and student learning outcomes

QEP project that would benefit your students (select **one**)

√	Interprofessional Education
_____	Competency Based Education
_____	Ethics
_____	Other (please specify)_____

Department: Health Care Disparities, Diversity and Advocacy

Degree Program: BS in Health Care Disparities, Diversity and Advocacy

Cycle Dates: 9/2017 through 8/2018

Program Mission Statement and Description of Program:

Mission
The mission of the Health Care Disparities, Diversity and Advocacy program is to provide the highest quality of education to students through formal didactic and practical experiences in the practice of health care disparities, diversity and patient advocacy.

Vision
We shall be the premier provider of education in health care disparities, diversity, and advocacy based on best practices and research in these professions.

Goals and Student Learning Outcomes:
Our students will concentrate on health disparities. The student will:
- Demonstrate awareness of factors contributing to disparities in health care among certain populations
- Identify resources available for reducing health disparities
- Demonstrate health professionals' role in eliminating health disparities

Our students will be culturally competent. The student will:
- Demonstrate cultural sensitivity
- Analyze barriers to the delivery of health care in selected populations
- Apply solutions to selected concerns in populations studied

Our students will be patient advocates. The student will:
- Demonstrate communication techniques in difficult environments
- Evaluate risks in health care institution- patient relationships
- Identify federal, state, and local regulations related to patient advocacy.

Program Accreditation: Not applicable.

Student Learning Outcomes
Program Name: Health Care Disparities, Diversity and Advocacy

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 1	Demonstrate awareness of factors contributing to disparities in health care among certain populations	DDA 4311 Disparities in Health Care: Mid-term Exam question #1 (essay): How do stereotypes, biases, and prejudices contribute to color-blind policies? How effective or ineffective are these policies in reducing health disparities?	67% Answered correctly. 33% Partially answered correctly.	>75% will answer correctly	Remediation provided for students, extra emphasis in lecture in the future.

Outcome 2	Identify resources available for reducing health disparities	DDA 4311 Disparities in Health Care: Investigate and identify community and state-level resources that can be mobilized to address health disparities, policy development, program interpretation, and funding to reduce health disparities	Students have the option of taking the final exam or writing and submitting a research paper. Topics will be researched with information analyzed and conclusions drawn. Adequate background information about the disparity (populations affected, historical, biological, psychological, cultural, political, and social influences) must be addressed. Students will indicate how the disparity will be reduced (at what level, type of intervention, potential obstacles to success). If the intervention will be successful, what will be the expected outcome (measure of success)? If the intervention will not work, state	➢ 75% will respond correctly	Students will synthesize learning and critical thinking to incorporate resources for reducing health disparities. If not successful remediation and re-teaching will be provided.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
			what changes are needed to improve the approach.		
Outcome 3	Demonstrate health professionals' role in eliminating health disparities	DDA 4311 Disparities in Health Care Mid-term Exam question #5: Describe the reasons that adolescents with chronic disease are now requiring care beyond the pediatric environment, what challenges they face when trying to get adult care, and what technology can be used to help them.	78% of students responded correctly. 22% of students had partially correct responses.	➢ 75% of students will respond correctly and completely	Transition of care and transfer of care were not adequately included in partially correct responses. Remediation and re-teaching provided. This area will be strengthened in lecture in subsequent years.

Outcome 4	Demonstrate cultural sensitivity	HS 4101 Diversity and Cultural Competence: Individual Diversity Assessment, & Diversity Journey Proposal: Working in healthcare requires you to interact with individuals and their families who have different beliefs, customs and behaviors that may conflict with your own cultural values. This assignment is intended to provide you with a powerful experience to step outside your comfort zone and gain an appreciation of others and develop critical thinking and empathy for other cultures including their belief system. This does not mean you are expected to change your convictions. Submit a proposal of an activity that will take you out of your cultural comfort zone. Identify the internal and external influences on your perceptions. Focus on specific events. In other words, analyze why you	86% of students submitted proposal, earning 4.5/5 points. 14% did not submit proposal, earning 0/5 points.	>75% of students will submit proposal, earning at least 4/5 points.	Criteria exceeded. Contact made with 14% of students who did not submit required assignment.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
		were there and what specifically took you out of your comfort zone.			
Outcome 5	Analyze barriers to the delivery of health care in selected populations	DDA 4311 Disparities in Health Care Mid-term Exam question #3: How can ethnogenetic layering identify the major factors responsible for health disparities in a particular region?	89% of students responded correctly. 11% of students had partially correct responses.	➢ 75% of students will respond correctly and completely	Ethnogenetic layering better identifies substructuring, which when coupled with advances in genetic variation detection and analysis, better develops understanding of health disparities as related to genetics, the environment, and disease.
Outcome 6	Apply solutions to selected concerns in populations studied	HS 4101 Diversity and Cultural Competence: Lecture and quiz: GBLT: Exclusion to Inclusion- Recent Supreme Court decisions and changes in the law mean that all employees have the same rights and benefits, no matter their sexual orientation or gender identity.	Due date 12/3/18.	➢ 75% of students will respond correctly and completely	Pending student assignment submissions.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 7	Demonstrate communication techniques in difficult environments	DDA 4341 Professional Development: Modules, Videos, and Exams: Module 4 Encouraging Team Communication and Collaboration; Module 5 Interpersonal Communication: The Basics of Listening; Being a Receptive Communication Partner; Module 6 Communication: Getting Results Without Direct Authority: Building Relationships and Credibility; Persuasive Communication; Interpersonal Communication That Builds Trust; The Art and Science of Communication; Professional Networking Essentials	Grades ranged from 4.2/5 to 5/5.	➢ 75% of students will respond correctly and completely	Remediation provided for assignments earning less than 5/5. Areas of weakness identified to strengthen in future lectures.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
Outcome 8	Evaluate risks in health care institution- patient relationships	HS 4111 Medical Law: Discussions: Intent: Case Brief- Read Vosberg v. Putney. Now, what do we think about the question of intent? Can you come up with a new definition of the word "intent" that helps to explain the result of this case? Can you think of some times that this definition could be helpful or harmful? What does this mean for us in a medical context? Is intended outcome useful or harmful to a discussion of who should be held responsible in medicine when something goes wrong?	71% of students responded, receiving all points (100/100). 29% of students did not provide any answer, receiving 0/100.	➢ 75% of students will respond correctly and completely	29% of students, who did not respond, were contacted to determine if there were correctable issues to prevent not responding in the future.

Outcome 9	Identify federal, state, and local regulations related to patient advocacy.	HS 4111 Medical Law: Discussions: Proximate Cause and Contributory Negligence- Consider contributory negligence or comparative fault in a medical context: it is one thing when you are carelessly crossing the street into oncoming traffic, but is that really comparable to seeking medical care? Should the burden be different for comparative/contributory fault in a medical context? Should patients really have to fear being accused of being responsible for their own harm in the medical context? After all, they're not the professionals in the situation. Then again, what about non-compliant patients? Certainly, medical professionals shouldn't be held responsible when patients refuse to comply with their recommended treatments. What response might we expect from medical professionals if the	100% of students participated in discussion	100% of students will participate in discussions	Criteria met- goal is to sustain student participation in future.

	Outcome	Assessment Method	Results	Criteria	How results were used to seek improvement
		standard were raised to protect patients more? What could we expect if we lowered the standard to protect professionals from bad patients? Where is the "Goldilocks Zone" of appropriate fault-sharing?			

Introduction

The School of Health Professions (SHP) has been implementing a Quality Enhancement Plan (QEP) focused on *Learning in a Team Environment*. You are receiving this survey because you were registered as a student SHP during the Fall 2018 semester.

Your experiences in team activities within your courses and across other experiences in SHP are important for helping the school improve the QEP. Your opinions about these experiences are important.

Please take about five minutes to complete the questions on this survey. Your responses to the survey are confidential and will only be reported as group data rather than as individual answers.

While you are not required to complete the survey, your input is very important to us. If you have any questions about the survey, please contact Dr. Rey Trevino (ratrevino1@mdanderson.org). Thank you for your assistance with this survey.

Section 1

Q1 Provide your MD Anderson ID in the space provided. Your responses to the survey will only be reported in aggregate. Your identity and your specific responses will not be shared. _____

Q2 Are you a First Generation College Student? (Your parents did not attend college)
○ Yes ○ No

Q3 How did you learn about the SHP? Select all that apply.
☐ Colleague (1)
☐ Family (2)
☐ Friend (3)
☐ Internet Search (4)
☐ Newspaper or Magazine article (5)
☐ Health/Career/Other Fair at my school (6)
☐ Presentation by SHP staff at my school (7)
☐ Other, please identify (8) _____

Q4 How many years have you been enrolled in SHP?
○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ >5

Q5 What types of courses are you taking at SHP this semester? Select all that apply.
☐ Face-to-Face (classroom on campus) ☐ Online ☐ Hybrid (some Face-to-Face and some Online)

Q6 Enter your high school (or its equivalent), city, state (and country).
_____

Q7 Enter the last educational institution, city, and state (or country) you attended prior to SHP.
(High school, community college, junior college, college, university, etc.).
_____

Section 2

Q8 Respond to the following statements based on your experience and your opinions about teamwork in general.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Working in teams is important to my success professionally.	☐	☐	☐	☐	☐
Learning to work in teams will benefit me in whatever career path I choose.	☐	☐	☐	☐	☐
Every career choice incorporates teamwork in some way.	☐	☐	☐	☐	☐
Teams can accomplish better outcomes than individuals working alone.	☐	☐	☐	☐	☐
Working in a team is more satisfying to me that working alone.	☐	☐	☐	☐	☐
My experience with teams makes me want to work in teams again.	☐	☐	☐	☐	☐
Working in a team improves my ability to work in teams in the future.	☐	☐	☐	☐	☐
Working in a team would allow me to learn new things.	☐	☐	☐	☐	☐
I would rather work on team projects than on my own.	☐	☐	☐	☐	☐
Teamwork improves the quality of final project outcomes.	☐	☐	☐	☐	☐
Teamwork keeps me more engaged and interested in project tasks.	☐	☐	☐	☐	☐
Teamwork helps me to improve my communication skills.	☐	☐	☐	☐	☐

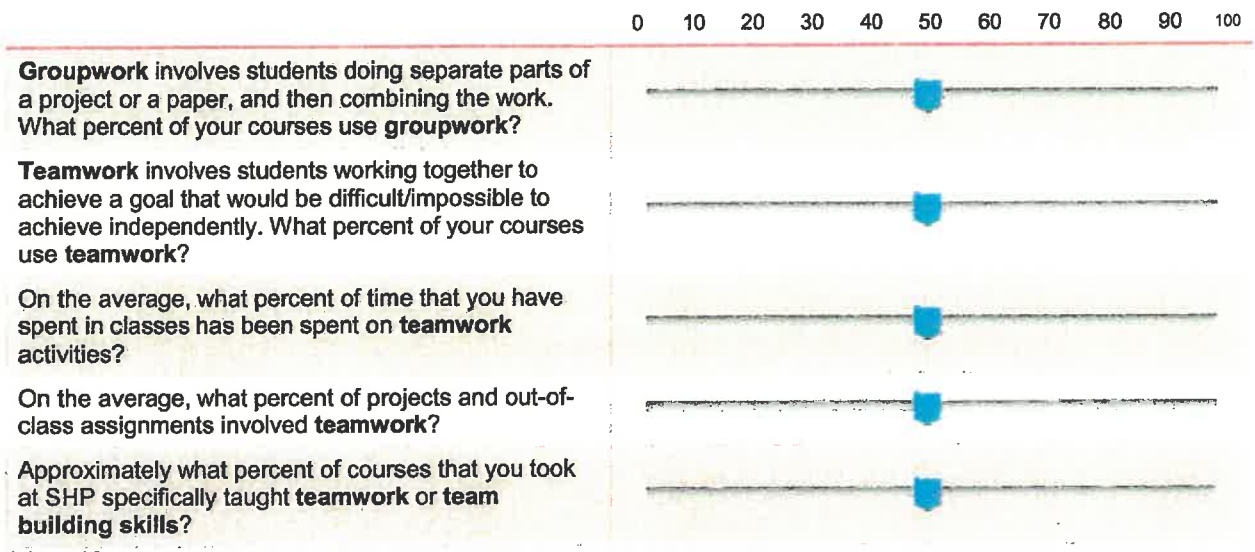
Adapted from

Pineda, R. C., Barger, B., & Lerner, L. D. (2009). Exploring differences in student perceptions of team work: The case of U.S. and Lithuanian students, *Journal of International Business and Cultural Studies, 1*.

Vance, K., Kulturel-Konak, S., & Konak, A. (2015). Teamwork efficacy and attitude differences between online and face-to-face students. *2015 IEEE Integrated STEM Education Conference,* 246-251.

Section 3

Q9 Respond to the following items based on your experiences in courses at SHP.



Adapted from
University of Alabama at Birmingham. (2018). *QEP Student Survey*. Retrieved from https://uab.co1.qualtrics.com/jfe/form/SV_0OkMQ73y11w31HL.

Q10 Which of the following statements best describes your experiences with teams at SHP?

- ○ I learned more through teams and about teamwork in SHP than past educational experiences.
- ○ I learned more through teams and about teamwork in past educational experiences than in SHP.
- ○ My learning through teams and about teamwork was equally effective in SHP and past educational experiences.
- ○ I did not learn through teams or about teamwork in SHP.

Adapted from
University of Alabama at Birmingham. (2018). *QEP Student Survey*. Retrieved from https://uab.co1.qualtrics.com/jfe/form/SV_0OkMQ73y11w31HL.

Q11 Select the items with which you agree.

- ☐ My teamwork skills are better now than they were before I attended SHP.
- ☐ I can mentor other students about how to be a successful team member.
- ☐ I have had opportunities to learn teamwork skills in student activities outside of the classroom at SHP.
- ☐ I have had good preparation in teamwork at SHP.
- ☐ I have had opportunities to observe effective teamwork behaviors while in SHP.
- ☐ I can explain the focus of the SHP QEP to other students.
- ☐ Most other students are aware of the focus of the QEP.

Adapted from
University of Alabama at Birmingham. (2018). *QEP Student Survey*. Retrieved from https://uab.co1.qualtrics.com/jfe/form/SV_0OkMQ73y11w31HL.

Section 4

Q12w How well have your classes and experiences in SHP prepared you for the following teamwork competencies?

	Extremely well	Very well	Moderately well	Slightly well	Not well at all
Describe the process of team development and the roles and practices of effective teams.	☐	☐	☐	☐	☐
Develop consensus on the ethical principles to guide all aspects of team work.	☐	☐	☐	☐	☐
Engage health and other professionals in shared patient-centered and population-focused problem-solving.	☐	☐	☐	☐	☐
Integrate the knowledge and experience of health and other professions to inform health and care decisions, while respecting patient and community values and priorities/preferences for care.	☐	☐	☐	☐	☐
Apply leadership practices that support collaborative practice and team effectiveness.	☐	☐	☐	☐	☐
Engage self and others to constructively manage disagreements about values, roles, goals, and actions that arise among health and other professionals and with patients, families, and community members.	☐	☐	☐	☐	☐
Share accountability with other professions, patients, and communities for outcomes relevant to prevention and health care.	☐	☐	☐	☐	☐
Reflect on individual and team performance for individual, as well as team, performance improvement.	☐	☐	☐	☐	☐
Use process improvement to increase effectiveness of interprofessional teamwork and team-based services, programs, and policies.	☐	☐	☐	☐	☐
Use available evidence to inform effective teamwork and team-based practices.	☐	☐	☐	☐	☐
Perform effectively on teams and in different team roles in a variety of settings.	☐	☐	☐	☐	☐

Interprofessional Education Collaborative. (2016). *Core competencies for interprofessional collaborative practice: 2016 update.* Washington, D.C.: Interprofessional Education Collaborative.

Ford,David M

From: Ford,David M
Sent: Friday, December 07, 2018 2:20 PM
To: Ford,David M
Subject: QEP 2021 SACSCOC Annual Meeting 12/2018 update. Dr. Steve Shelley. FORMAT/PRINT

Quick summary

Change 1). Emphasis on student success replaces "environment of student learning ". Student learning is the focus not faculty/staff activities/strategies.

Change 2). Clearer connection to planning process.

A) institutional habit of making decisions based on evidence

B) date rich environment

C) culture of data analysis

1) evaluate effectiveness of planning and assessment process now-BEFORE QEP topic identification process starts (this was the reason for the December 18 SLO summary request).

2) can you access the kind of data and analysis that will inform the institutional decision process?

3) keep track of possible initiatives/topics as you go

4) identifying a topic
"ongoing comprehensive planning and evaluation "
"identified " not chosen through separate process

5) decision making plan/ process includes appropriate constituencies, clear and transparent for stakeholders, based on evidence

Change 3). Resources not just capability
Resources to initiate, implement and sustain
Adequate and appropriate (human, fiscal and physical)

All else remains the same. (lead evaluator, emphasis on enhancement, budget, assessment, etc. (question from November QEP Steering Committee- Given change to resource focus, probably good to submit QEP budget separately, but keep funds within SHP).

MARCH 16-18, 2021

SACSCOC

CS-33
Reaffirmation Class of 2021
Sunday, December 9, 2018

STEVEN M. SHEELEY, PHD
SENIOR VICE PRESIDENT

The Quality Enhancement Plan

Understanding and Planning
For the QEP

CS-33

"...An opportunity to catch an institution doing something good...."

Tom Benberg
(former SACSCOC Chief of Staff)

2018 vs. 2012 Editions

- Just one standard (7.2); no Core Requirement
- Reaffirmation Committee will not judge acceptability
- "Student success" replaced "environment of student learning"; emphasis on "specific student learning outcomes"
- Clearer connection to planning processes
- "Resources," not just "capability"

What Did ***Not*** Change?

- QEP requirement(s)
- Lead evaluator
- Emphasis on enhancement (improvement)
- Budget
- Assessment
- Still no "approval"

...QEP Foundation and Context: Planning and Assessment

- Data-rich environment
- Culture of data and analysis
  - "Good" data
  - Analysis is key
- Institutional habit of making decisions based on evidence

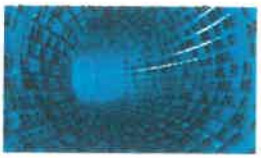
Helpful Hints

- Evaluate effectiveness of planning and assessment processes now...before the QEP topic identification process starts
- Can you access the kinds of data and analysis that will inform the institutional decision process?
- Keep track of possible initiatives/topics as you go

Identify a Topic

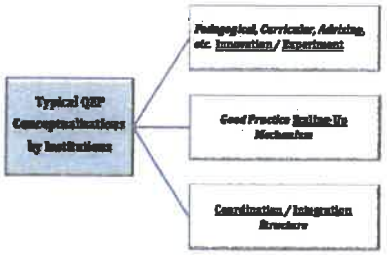
- "Ongoing, comprehensive planning and evaluation"
- "Identified," not chosen through a separate process
- Gap between expectation and reality

Ongoing Planning and Analysis

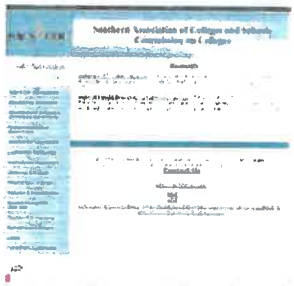


- Appropriate data and analysis consistently available
- Decision-making plan/process
  - Includes appropriate constituencies
  - Clear and transparent for stakeholders
  - Based on evidence

Types of QEPs (Matveev)



http://www.sacscoc.org/research.asp



Broad-based Support

- From planning to completion
- Appropriate constituencies

Helpful Hints

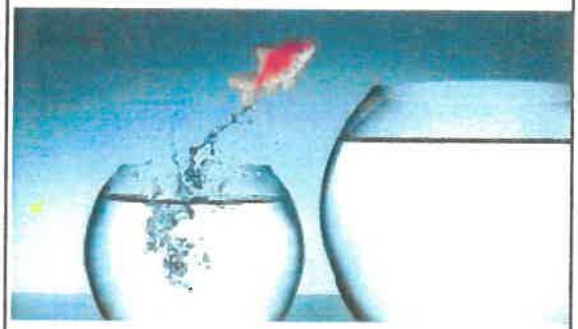
- Support and/or participation?
- What level of knowledge and engagement is appropriate for various stake-holders?

Focused on student learning/success

- Specific outcomes: student learning and/or student success
- Emphasis on "improving"
- "and/or"

Helpful Hints

- Distinguish between student learning/student success and institutional strategies
- Ask: "How can we improve student learning outcomes?" "How can we improve student success outcomes?"
- What would "improvement" look like?



Committed Resources

- Initiate
- Implement
- Sustain to completion
- Adequate and appropriate resources
  - Human?
  - Fiscal?
  - Physical?

"If you can dream it, you can do it. Always remember that this whole thing was started with a dream and a mouse."

Walt Disney

Helpful Hints

- Most committees are concerned with the project's "scope," institutional capability, sustainability
- The QEP is action research; we hope you learn something about student learning that will not only enhance your educational quality but that you can also share with everybody else
- Pay careful attention to reallocated resources

Goals and assessment plan

- Foundation in IE system
- Clear goals/outcomes (reflect project scope)
- Measure student learning (prefer direct)
- Authentic measurements
- Baseline(s) and target(s)
- Sustainable system/process

Helpful Hints

- Student learning is the focus, not faculty/staff activity (strategies)
- Keep it as simple as you can
- Synergy with existing assessments is a positive
- Gather meaningful data about the success of your project
- Is there a group empowered to analyze data and suggest mid-course improvements?
- Keep the Fifth-year Impact Report in mind

QEP Lead Evaluator

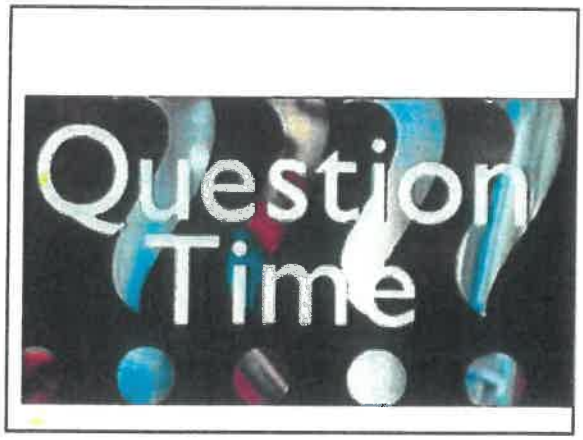
- (http://www.sacscoc.org/pdf/081705/Quality%20Enhancement%20Plan.pdf)
- Check with SACSCOC VP; some of us have more precise deadlines
- Content expert; evaluation by entire On-Site Reaffirmation Committee
- Doesn't have to be from SACSCOC region; look to your literature review, etc., for ideas
- Aim high – might be surprised at who will agree to serve

Lead Evaluator

- Make contact with nominee before submitting name to SACSCOC
  - Assess nominee's willingness and availability
  - Ensure no conflict of interest
  - Ask nominee to reserve visit dates on calendar
  - Expenses plus $100 miscellaneous expenses
- Submit at least top two choices; second choice likely a backup
- Vetting by the SACSCOC staff member before extending invitation to serve

FAQ

- Can we "pilot" the program?
- Do we have to involve every constituency in the planning and implementation?
- Can our second QEP continue the emphasis of the first?
- May we use indirect measures to assess goals/outcomes?


Question Time