

One Physics – West Ohio Residency Orientation Handbook

INTRODUCTION

One Physics aims to be a national leader in providing high quality clinical medical physics services. Part of this commitment to clinical leadership is exemplified through training the next generation of high quality clinical medical physicists with their Medical Physics Residency programs. The Therapy Residency Program at One Physics – West Ohio (and its Affiliate Sites) is designed to prepare MS or PhD graduates for a career in Medical Physics in the sub-specialty of Radiation Therapy Physics. This 24 month training program is also designed to help prepare the Resident for the ABR Board Certification process.

HISTORY AND SCOPE

Spectrum Medical Physics, Inc was incorporated in 2000 to provide radiation oncology physics and dosimetry support to the Allison Radiation Oncology Center located in Lima, OH. The initial corporation consisted of the two incorporating partners Patrick Diltz and Ronald Froehlich. The corporation has since expanded to provide radiation oncology services to the original Lima facility in addition to 3 more radiation oncology centers.

In 2020, Spectrum Medical Physics, a consulting physics group consisting of three full time DABR Physicists and two MDCB certified dosimetrist covering two full time and two part time clinics, decided to partner with the Medical Physics community to bridge the gap between the number of graduates from CAMPEP accredited MS, DMP, and PHD programs and the number of residency positions. Our initial Accreditation was granted in September of 2021.

In the spring of 2024 Spectrum Medical Physics became part of the Apex Physics Partners group, and directly joining the OMPC physics service group (Both the OMPC and SMP names continue to be used in their respective clinics). From the outset of the partnership there was a desire to expand the Spectrum Medical Residency Program into the OMPC service area, specifically the Youngstown, OH market. The OMPC subgroup in Youngstown Ohio consists of four DABR Physicists covering one full time and three part time clinics. With CAMPEP Approval, One Physics – Youngstown admitted their first resident in January, 2025. Full CAMPEP Accreditation is currently pending.

In January, 2024 the program submitted to CAMPEP for a name Change. The current full name is:

One Physics – West Ohio Therapy Physics Residency

With Affiliates as:

One Physics – Youngstown (OH)

At this time, four residents are in the residency program concurrently.

One resident is admitted to the One Physics – West Ohio program main hub (Lima, OH) each year with a nominal summer start.

One additional resident is admitted to the One Physics – West Ohio program main hub (Lima, OH) every other year for a total of 3 residents at the main hub.

Each resident travels to another location approximately 1 day per week (all locations of the main hub are <70mi from the home site and qualify under the single site model).

One resident is admitted to the One Physics – Youngstown (OH) Affiliate program every other year. The Affiliate in Youngstown is 210mi away from the main hub and does not qualify to be part of a “Single Site” model.

ONE PHYSICS WEST OHIO PROGRAM STAFF (HUB SITE)

1. Patrick Diltz, Ph.D. (Physicist - Program Staff)

B.S., Engineering Science Pennsylvania State University
Ph.D., Biomedical Science, The Medical College of Ohio
DABR, Therapeutic Radiologic Physics and Diagnostic Radiologic Physics

2. Ronald Froelich, M.S., (Physicist - Associate Program Director, Program Staff)

B.S., Radiation Therapy Technology, Wayne State University
M.S., Biomedical Science, The Medical College of Ohio
DABR, Therapeutic Medical Physics

3. Philip Kallenberg, M.S., (Physicist - Program Director, Program Staff)

B.S., Physics, University of Dayton
M.S., Radiological Medical Physics, University of Kentucky
Residency, University of Kentucky
DABR, Therapeutic Medical Physics

4. Kapil Mishra, M.S. (Physicist - Program Staff)

B.S., Cleveland State University
M.S., Cleveland State University
Residency, One Physics – West Ohio / Spectrum Medical Physics
MDCB, Certified Medical Dosimetrist

5. John Schaub (Dosimetrist - Program Staff)

The Ohio State University / Arthur G. James Cancer Hospital
MDCB, Certified Medical Dosimetrist

ONE PHYSICS - YOUNGSTOWN (AFFILIATE) PROGRAM STAFF

1. Christian Langmack (Physicist - Associate Program Director, Program Staff)

B.S., Purdue University

Ph.D., The Ohio State University

M.S., University of Toledo

Residency, University Hospitals/ Case Western Reserve University

DABR, Therapeutic Medical Physics

2. Shanna Pervola (Physicist – Program Staff)

B.S., Pennsylvania State University

M.S., University of Kentucky

DABR, Therapeutic Medical Physics

3. Tanvir Baig (Physicist – Program Staff)

B.S., University of Dhaka

M.S., University of Dhaka

M.S., Case Western Reserve University

Ph.D., Case Western Reserve University

MS Med Phys: Cleveland State University

Residency: University Hospitals/ Case Western Reserve University

DABR, Therapeutic Medical Physics

4. Philip Kallenberg (Physicist – Program Director, Program Staff)

B.S., Physics, University of Dayton

M.S., Radiological Medical Physics, University of Kentucky

Residency, University of Kentucky

DABR, Therapeutic Medical Physics

FACILITIES

1. **Mercy Health – Lima Radiation Oncology Center (Allison Radiation Oncology Center)**
 - a. **Affiliation – One Physics - West Ohio (Program Main Site)**

Address

803 W. Market St.
Lima, OH 45805

Procedures

- 4DCT
- SBRT
- SRS

Computed Tomography

- Philip Big Bore

Linear Accelerator

- Varian TrueBeam #1 (6DOF table, OSMS, MPC)
- Varian TrueBeam #2 (MPC)

Treatment Planning Computer

- Philips Pinnacle
- Varian VariSeed (Seed Implant Program inactive)
- Varian BrachyVision (HDR Program inactive)
- MIM

Record and Verify System

- Elekta Mosaik

Physics Equipment and Software

- MuCheck
- Iba Blue Phantom 2 (Wellhofer) Water Scanning Tank with myQA Accept (formerly Omni Pro)
- Sun Nuclear IC Profiler
- Sun Nuclear DailyQA3
- Sun Nuclear MapCheck3
- Sun Nuclear SRS MapCheck

2. Mercy Health – Springfield Cancer Center
a. Affiliation – One Physics - West Ohio

Address

148 W. North St
Springfield, OH 45504

Procedures

- 4DCT
- SBRT
- SRS

Computed Tomography

- GE Optima 580 RT

Linear Accelerator

- Varian TrueBeam (6DOF, IDENTIFY, HyperArc)
- Elekta Versa (4DOF table)

Treatment Planning Computer

- Philips Pinnacle
- Varian Eclipse
- Varian VariSeed (Seed Implant Program inactive)
- Varian BrachyVision (HDR Program inactive)
- MIM

Record and Verify System

- Elekta Mosaiq

Physics Equipment and Software

- MuCheck
- Iba Blue Phantom 2 (Wellhofer) Water Scanning Tank with myQA Accept (formerly Omni Pro)
- Sun Nuclear IC Profiler
- Sun Nuclear DailyQA3
- Sun Nuclear MapCheck3
- Sun Nuclear SRS MapCheck

3. Grand Lake Regional Cancer Center
a. Affiliation – One Physics - West Ohio

Address

900 Havemann Rd
Celina, OH 45822

Procedures

- 4DCT
- SBRT

Computed Tomography

- GE Optima 580 RT

Linear Accelerator

- Varian iX

Treatment Planning Computer

- Philips Pinnacle

Record and Verify System

- Elekta Mosaiq

Physics Equipment and Software

- MuCheck
- Sun Nuclear IC Profiler
- Sun Nuclear DailyQA3
- Sun Nuclear MapCheck3

4. St. Elizabeth – Youngstown Radiation Oncology Center
a. Affiliation – One Physics - Youngstown

Address

1001 Covington St
Youngstown, OH 44510

Procedures

- 4DCT
- SBRT
- HDR

Computed Tomography

- GE Optima/Discovery 4DCT

Linear Accelerator

- Elekta Versa x2

Treatment Planning Computer

- Philips Pinnacle
- Monaco
- MIM

Record and Verify System

- Elekta Mosaik

Physics Equipment and Software

- RadCalc
- Sun Nuclear ArcCheck
- PTW 3D Tank

5. Other Youngstown Affiliate Sites:

- a. Mercy Health St. Joseph – Warren (13mi from SEYRO)**
- b. Mercy Health St. Elizabeth Boardman (9mi from SEYRO)**
- c. Mercy Health Austintown Radiation Oncology (10mi from SEYRO)**

6. Parkview - Bryan Radiation Oncology Center
a. Part of the Packnett Family Cancer Institute

Address

524 W. High St
Bryan, OH 43506

Procedures

- 4DCT
- SBRT

Computed Tomography

- Siemens Somatom go.Sim

Linear Accelerator

- Varian TrueBeam Install 2024

Treatment Planning Computer

- Philips Pinnacle (Inactive)
- Varian Eclipse
- Velocity
- MIM

Record and Verify System

- Elekta Mosaiq (Inactive 2024)
- Varian Aria

Physics Equipment and Software

- RadCalc
- Sun Nuclear MapCheck
- Standard Imaging Beam Checker
- Standard Imaging CrossChecker

PROGRAM OUTLINE

The One Physics Residency Programs in therapeutic medical physics are each two-year programs offering a diverse range of equipment and procedures.

The programs each incorporate the standards approved by the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP) and the elements as described in the AAPM Report No. 249 (Essentials and Guidelines for Clinical Medical Physics Residency Training Programs). The two-year programs each consists of 9 modules covering a wide range of clinical practices. Each module is led by a staff member who will be responsible for ensuring the resident stays on task and completes the specified competencies as listed within each module.

- One Physics – West Ohio includes 5 clinical locations all within reasonable driving distance to accomplish the training and broad exposure.
- One Physics- Youngstown includes 4 clinical locations all within reasonable driving distance to accomplish the training and broad exposure.

Requirements of the Residency Training Program

The specific requirements necessitate that an individual applying to this program must have a formal undergraduate education in physics or a related science, followed by advanced studies in an appropriate graduate program. To ensure the safety of our patients and the quality of the care we offer, it is essential that the knowledge and competence of individuals applying to our program be of high standards. Because our working base is in the Community Hospital setting without an affiliated academic institution to formally supplement didactic training, incoming residents must have graduated from a CAMPEP accredited MS, DMP, or PhD program in Medical Physics or a PostDoc CAMPEP Accredited Certificate program in Medical Physics. All residents must complete the curricula of the residency program regardless of prior experience.

Hours: In accordance with ACGME rules, a resident is not to work more than 320 duty hours¹ in any 4-week period (average of 80 per week). One Physics Residents should expect to work 55-60 hours per week on average with natural fluctuations based on clinical need and program components.

The One Physics – West Ohio Program is using the online platform Typhon (typhongroup.net) for tracking the progress of each resident through the residency program. The residents must maintain an up-to-date, detailed list of all procedures in which they participate. All procedures each day must be logged into a Typhon Case Log entry. The case log will be regularly reviewed by the Program Director and/or other program staff as needed (e.g. as part of the monthly Progress Meetings between the PD and each resident). Residents are required to fulfill all requirements for each module (rotation). Residents are further required to adhere to all Mercy Health conduct policies as outlined in this policy manual.

¹ <https://www.acgme.org/what-we-do/accreditation/clinical-experience-and-education-formerly-duty-hours/research-and-testimony/>

- Resident Job Performance
 - In accordance with the policy on Due Process for resident performance (SMP Adopted the Mercy Health GME Policy on Due Process), Residents not achieving satisfactory performance will be counseled and issued a Notice of Concern. An action plan with remediation steps to a return to good standing will be presented to the Resident. The timeframe for remediation must be a minimum of 60 days. If the remediation period ends and the performance has not satisfactorily improved, the Resident will be placed in a probationary status. The duration of the probation is 30-60 days. Documented areas of substandard performance, documented failure to improve in the “Notice of Concern” areas and goals for acceptable improvement will be given to the resident. The resident may be terminated if the resident’s performance has not significantly improved after the probation period.
- Personal Conduct
 - All representatives of One Physics shall act in full accordance with the rules and policies of the hospital systems in which they work. These rules and policies include a commitment to comply with all applicable laws and to conduct business in accordance with the highest ethical standards. Additionally, representatives have a legal and ethical responsibility to maintain the privacy and confidentiality of patient health care information and to protect the privacy of patients. Therefore, residents must agree to comply with the Corporate Responsibility Program Provisions of Mercy Health and fully understand the requirements set forth.
 - The program director may discipline physics residents for failure to comply with One Physics and/or Hospital (e.g. Mercy Health) policies. In addition to verbal coaching, Corrective actions include verbal warnings, written warnings or suspensions, and terminations. Typical corrective action begins at a verbal warning and progress in a three strike process. However, because situations that require corrective action have different levels of seriousness, we may decide that a level of action may need to be different from that which would normally apply would be more appropriate. Furthermore, certain forms of serious misconduct, policy/procedure violation or performance, may result in immediate suspension or termination without notice or prior warning. Management may skip certain disciplinary steps or repeat certain disciplinary steps depending on the particular facts of each situation.

Resident Supervision

In order to ensure patient safety and quality patient care while providing the opportunity for maximizing the educational experience of the physics resident in the hospital setting, it is expected that a residency program staff member will be available for supervision either in person or via video call (Teams, Zoom, FaceTime, etc.) during clinic hours. Additionally, One Physics – West Ohio Residency program and Affiliates must maintain compliance with their respective Cancer Center policies for supervision (e.g. the GME Policies section of the Mercy Health Policy Manual).

PROGRAM STRUCTURE

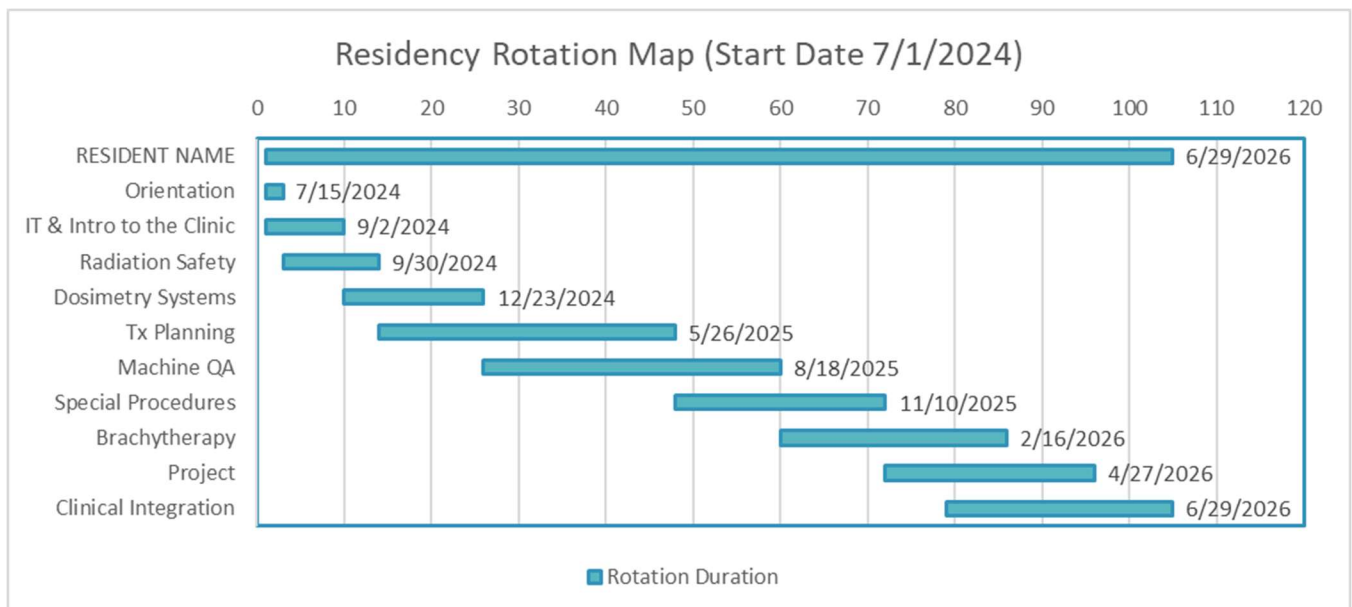
The residency program is split into an orientation plus 9 modules/rotations. Because the role of a clinical medical physicist includes balancing many different types of activities at once, two modules/rotations are operated in parallel (at half-time attention) to help achieve the overall goals of the program. The Residency Program is loosely structured into two halves, each with overarching goals.

Year 1 will Cover: “The Patient Experience”/ Intro to the Clinic, Radiation Safety, Dosimetry Systems, Treatment Planning, and Machine QA.

Year 1 is aimed at answering the question: How can I, in a “Culture of Safety,” Set-up, Sim, plan, and treat Complex/3D/IMRT treatments on Equipment that is properly calibrated and shielded?

Year 2a (Months 13-18) will cover the remaining rotations: Treatment planning continued, Machine QA continued, SBRT/SRS Planning & other Special Procedures, and Brachytherapy, while the final 6 months of training will be focused on Operation as a Full-Time Medical Physicist (Clinical Integration) and the Research/Clinical Improvement project.

An Example Rotation Timeline Map (7/1/2024-6/30/2026) is shown:



Certain elements (specifically Machine QA and Patient Specific QA) are part of what it means to be a clinical medical physicist, and as such, certain elements within these modules are additive and are continued to be performed even after the module competencies have all been completed.

Evaluation tools

A) Read and discuss/present:

- a. The goal is for each resident to present a Journal Club article six times per year with Journal Club meetings happening twice per month.
- b. Additionally, documents from the rotation reading list (such as a Task Group Report) will be discussed with the rotation mentor, other program staff or in a group setting, so that the resident may demonstrate understanding of the document (Knowledge Factors).
- c. Residents are responsible to take initiative to complete their reading assignments for the rotation and sign off on the readings.

B) Core Competencies:

- a. these are sign-offs of what the Resident should be able to demonstrate ability to do. It combines verbal explanation (Knowledge Factors) with hands on Practical Applications (procedural skills).
 - i. **Note: In some instances, the practical application involves following a written procedure. Using well defined written procedures (such as a Varian Manual) is encouraged as part of demonstrating competency.*
- b. The rotation mentor is responsible for ensuring that all core competencies for a given rotation are complete prior to the rotation "Oral Exam"
 - i. A few exceptions are granted when the activities are time specific and do not entirely coordinate with the rotation.
- c. Any program staff or the resident may initiate a competency to be evaluated for sign-off, however in general the responsibility is on the resident to take the initiative for sign offs.
- d. Only Program Staff can Initial competencies as being signed off. Having a competency item marked as performed on the Typhon platform by the resident is not equivalent to having been evaluated for competency.
 - i. Typically Staff has indicated that the resident is "competent" in most areas prior to the rotation exam. The rotation exam can also be utilized as proof of competencies in some instances.
- e. The resident is responsible for self-sign off on rotation readings

C) Reports:

- a. These are either for things that need to be researched and learned about and reported back that are not in our clinical environment (Something like a report on Gamma Knife or on IORT etc) or are submit-able reports (Such as a mock submission of a Vault Shielding design). Currently the Residency calls for four to six written reports (approximately 3-5 pages in length).

D) Oral Exams:

- a. Two Comprehensive exams, one at the end of each year to demonstrate overall competency for graduation (with or without conditions)
 - i. Residents are required to pass both annual exams in order to graduate.
 - ii. Failing either oral exam will require the resident to not be promoted. The Resident is placed on probationary status and that resident must complete

a full re-examine after 3 months. *Please note that failing an Annual Exam combines a 60 day notice of concern period with a 30 day probationary period. Failing a Re-Examination results in termination from the program.

- iii. Passing with conditions does allow the resident to graduate to the next level, but (in most instances) places them in a Notice of Concern Status for 60-90 days based on the amount of remediation necessary to return to good standing. After the remediation period, an evaluation of progress is done of the resident by the PD and other program staff. Failure to satisfy these conditions after a three month period would place the resident into a probationary status.
 - iv. Following the first exam, remedial work and instruction in the area of weakness will be assigned to be completed in the second year to ensure the resident's success.
- b. Six "Rotation Exams" That demonstrate knowledge in each specific rotation
 - c. Radiation Safety, Machine QA, Treatment Planning, Brachytherapy, Dosimetry Systems, and Special Procedures,.
 - d. Presentation and defense of the Research / Clinical Improvement Project.
 - e. All Oral Exams are "Presentation and Panel Style" with (typically) three physicists acting as examiners. Each rotation has an exam that is slightly different from the rest, but they are all defined and include some or more of:
 - i. Presentation of Knowledge from the rotation (Powerpoint etc.)
 - ii. Pre-prepared Question and Answer
 - iii. Practical Hands-on Activities demonstrating knowledge
 - iv. A follow-up Q&A session to ensure that all rotation metrics have been covered.

Promotion Requirements:

In accordance with the St. Rita's Medical Center Policy on Resident Promotion, the following criteria must be met to graduate from the PGY1 level to the PGY2 level:

- A minimum of three fully completed rotations (including exams) out of the following four: Radiation Safety, Dosimetry Systems, Treatment Planning and Machine QA.
- A passing Year one exam
- Not actively in a 3-month probationary period.

Following the Due Process, a maximum of three additional months may be taken to successfully complete the PGY1 requirements to be promoted to PGY2 (must be no later than 15 months into the residency).

Weekly Structure:

At the beginning of the week the resident should touch base with the rotation mentor (or other available program staff) to briefly discuss the week's objectives. This is typically done through Zoom messaging Chat or Zoom video chat

- Mondays typically have a high amount of clinical work to start the week
- Journal Club meetings typically are done on Tuesdays or Wednesdays
- Physics Group/Department meeting are typically done on Wednesdays
- Resident Rotation Exam are typically done on Wednesdays

Clinical Involvement:

- Department Meetings: Participate in monthly to quarterly department meetings as invited by the Radiation Oncology Department Director
- CQI: Participate with a staff physicist in Quarterly Continuous Quality Improvement Meetings
 - Morbidity and mortality case review are performed quarterly as a part of the CQI meeting, and is part of the confidential departmental quality assurance program. The physician will submit cases of morbidity or mortality that directly result from their radiation treatment. The physics resident will review all dosimetry aspects pertaining to the case and present their findings to their mentor.
- Chart Rounds / Peer Review
 - During treatment planning rotation, participate in weekly Chart Rounds and New Case Peer Review. When Treatment Planning Rotation is not active, participation in chart rounds and peer review will be as availability allows.

Resident Ongoing Responsibilities

The resident will participate in all activities as indicated by the curriculum and all assigned physics clinical activities (such as weekly chart review) for which he/she has passed competency. All activities will be performed according with hospital, departmental, state and federal regulations.

Machine QA

After completing Monthly QA competency, the residents are responsible for carrying out all machine routine QA procedures according with departmental policies under a physicist's supervision. It is the resident's responsibility to inform a physicist within 24 hours of any deviation within 3%, and immediately about any deviation over 5%, unless indicated otherwise by the departmental policy.

Physics and Clinical implementation projects

All residents will participate in Physics and Clinical implementation projects as requested by their mentor or program director.

Sample Residency Outline:

While the Residency follows a rough structure, the timeline is not set in stone. Presented here is a sampling of what a Resident's program pathway could look.

Year 1:

0. Orientation – Week 1-2

- a. Orientation/Onboarding with One Physics
- b. Orientation to the One Physics – West Ohio Residency Program
- c. Ethics and Professionalism
 - i. AAPM/RSNA Modules (there are 11 of them)
 - ii. AAPM Code of Ethics Policy
 1. <https://www.aapm.org/org/policies/details.asp?id=519&type=PP>
- d. Orientation to each clinic location
- e. Introduction to Radiation Oncology, Linear Accelerators and CT Simulators
- f. Radiation Safety Training
- g. Occupational Safety Training (Electrical, Hazmat, Heavy Objects/Collision etc.)
- h. Introduction to MPLA and MedPhys 3.0
- i. Patient Safety
 - i. Safety is No Accident

1. Information Technology & Intro to the Clinical Integration Intro: 9 weeks half-time. Planned Start: Week 1

- a. Patient Safety: Safety is No Accident
- b. Observations of the roles and workflows of others in the radiation oncology team.
- c. The Simulation and Setup of a Patient
 - i. Observe CT Simulations and discuss what goes into “good setup” of a particular patient. Understand why each piece of Setup Equipment (Treatment Aid) is chosen. What Task does it perform?
 - ii. Observe Patient treatments focusing on patient setup, OSMS, KV-KV Matching and CBCT Matching to reference CT.
- d. Fundamentals of weekly chart reviews
- e. Fundamentals of the Clinical Systems
 - i. Record and Verify
 1. Clinical Usage
 2. Template Set Up
 3. Store and retrieve Patient information
 - ii. Treatment planning system
 1. Archive and Restore Patients
 2. Basics of Scripting & Commands

- iii. Data Transfer, Storage and security
 - 1. PACS, HL7, DICOM, IHE, IHE-RO
- iv. COMP: Create a database (Microsoft Excel, Access, other?)

- f. TG-100
- g. MPLA, MedPhys 3.0
- h. Weekly Chart Checks – Supervised

2. Radiation Safety: 11 weeks half-time. Planned Start: Week 3

- a. OAC 3701:1-67
- b. Begin becoming Familiar with NCRP 147 and 151
- c. Linear Accelerator Vault Shielding Scenario (NCRP 151)
- d. Linear Accelerator Vault Survey
- e. CT Sim Room Shielding Scenario (NCRP 147)
- f. Use NCRP 147 and NCRP 151
- g. HDR Emergency and Safety Training
- h. HDR Room Shielding Scenario
- i. REPORT 5: Mock Submission to ODH for Shielding design of Linac Vault (Or CT Room or HDR Room as Assigned)
- j. Attend a Radiation Safety Meeting
- k. Participate in ODH Survey
- l. Write an Annual Safety Review
- m. Training Others: Prepare and disseminate (Teach) “Instruction to Workers” to staff and document compliance
- n. Radiation Safety ROTATION EXAM

3. Dosimetry Systems: 16 weeks half time. Planned Start: Week 10

The intent of this rotation is to allow the resident to pursue study of the physical aspects of radiation therapy dosimetry systems, so as to gain in depth knowledge of the principals and characteristics of their operation and construction.

The Dosimetry Systems rotation will be characterized by the resident studying relevant reports and texts that describe the physics, construction and operation of the various dosimetry systems. In addition, the resident will perform certain measurements, as described in the completion checklist, so as to gain a hands-on understanding of the operation and limitations of the systems. The rotation includes Patient Specific QA (PSQA) and small field Dosimetry.

- a. Pour Cerrobend Block / design, cut & place tertiary shields
 - i. Understand and Discuss Role of each
- b. Detectors and Dosimeters –
 - i. Ion Chambers
 - ii. Diodes

- iii. TLDs/ OSLDs
- iv. Film
- c. Learn Patient Specific Delivery QA (IMRT QA)
 - i. TG218
 - 1. Competency in IMRT QA: Perform, evaluate, diagnose errors
- d. IMRT Commissioning, Planning and QA (TG119, TG120, TG218)

4. Treatment Planning: 34 weeks half-time. Planned Start: Week 14

- i. Definitions / Terms
- ii. TG258 (Hand Calc Formalism)
- iii. MU Hand Calculation
- iv. QUANTEC2010, Mobius, Hytec etc
- v. Dose Limits of Organs at Risk
- vi. Complex/3D/Electron/IMRT Treatment plans of a variety of clinical sites
- vii. Image Fusion with other modalities

5. Machine QA: 32 weeks half-time. Planned Start: Week 26

- i. Learn the fundamentals of Linac Daily QA and Linac Monthly QA
- ii. Learn the CT Daily QA and CT Monthly QA
 - 1. TG-66
- iii. COMP: Components of a Linac (Design and Function) & Operation of a Linac
- iv. COMP: CT QA (TG-66)
- v. TG51
- vi. REPORT 1: TG-51 Linear Accelerator Calibration
- vii. TG40/TG142
- viii. MPPG 8: Compare and contrast with TG142
- ix. Annual QA
 - x. REPORT: Operation, Acceptance and Commissioning a Linac
 - xi. Machine QA ROTATION EXAM
 - xii. Expectation for Ongoing Machine QA with other residents and staff – Linac Monthly QA, Linac Annual QA, CT Monthly QA, CT Annual QA

COMPREHENSIVE YEAR 1 ORAL EXAM

- **In order to take the Year 1 oral exam, three rotations must be completed including rotation exams. A few competencies that are inherently time specific may be left incomplete where applicable (e.g. participate in an ODH Survey).**

Year 2

- b. Clinical Integration (Cont'd)
 - i. Participation in Chart Rounds, CQI Meetings etc.
 - ii. TG-275 (Plan Check and Chart Check)
 - iii. Regular participation in Weekly Chart Check
 - iv. Regular participation in Initial Physics Plan Check
 - v. Clinical Integration ROTATION EXAM

- c. Machine QA
 - i. Routine Monthly and Annual QA as needed.

- d. Treatment Planning (cont'd)
 - i. MPPG5
 - ii. Continue Planning Competencies as listed
 - iii. Treatment Planning Rotation ORAL Exam

- 6. Special Procedures: 26 weeks half-time. Planned Start: Week 48
 - a. COMP and REPORT: Acceptance Testing and Commissioning of a TPS Beam model
 - b. TG-101, MPPG9
 - c. RTOG 0813, 0915
 - d. ACR Practice Parameters on SRS and SBRT
 - e. Demonstrate Understanding of SRS and SBRT
 - f. SRS and SBRT Treatment plans
 - g. TG72 (IORT)
 - h. TG23 (TSE)
 - i. TG17 (TBI)
 - j. REPORT: Read and Report on 2 special procedures that your Residency doesn't perform that are of interest to you
 - k. TG45 and TG203 (Pacemakers)
 - l. AAPM Report 50 (Fetal Dose)
 - m. Write a Special Medical Physics consultation report for a patient who has a pacemaker near the treatment fields
 - n. Understanding the management of Patients requiring re-irradiation
 - o. Understanding the management of pregnant patients
 - p. Special Procedures ROTATION EXAM

- 7. Brachytherapy: 26 weeks half-time. Planned Start: Week 60
 - a. TG-56: Code of Practice For Brachytherapy Physics
 - b. 10CFR20 & 10CFR35
 - c. TG-43

- d. COMP: HDR Warmup/Daily QA Procedures
 - e. HDR Hand Calculations
 - f. REPORT: Acceptance Testing/Commissioning of HDR System, Applicator and Sources
 - g. Treatment Planning COMP
 - i. Tandem and Ovoid
 - ii. Tandem and Ring
 - iii. Vaginal Cylinder
 - iv. Breast Balloon / Savi
 - h. Source Exchange and Quarterly QA
 - i. Annual HDR TPS QA
 - j. LDR Prostate Volume Study
 - k. LDR Prostate Pre-Plan Case
 - l. LDR Prostate Intra-op / Real Time Case
 - m. Radiation Safety Elements of a PSI
 - n. Annual QA of Ultrasound Unit
 - o. Annual QA OF VariSeed System
 - p. Brachytherapy ROTATION EXAM
8. Research/ Clinical Improvement Project: 24 weeks half-time Planned Start: week 76
- a. Write-up and presentation of project proposal (scope of work)
 - b. Test, retest etc...
 - c. REPORT: Write-up of Project Results etc. for implementation or for submission, or for continuation of work.
 - d. Oral Presentation of Research / CI Project.
9. Clinical Integration 26 weeks half-time. Planned Start: week 79
- a. Operate as a clinical medical physicist with increased levels of responsibility proving readiness to operate independently in post-residency position.

COMPREHENSIVE RESIDENCY ORAL EXAM

Please Note that the Comprehensive Residency Oral Exam should be given 2 weeks ahead of the resident graduation date to allow the resident to address any minor conditions of the exam.

ONE PHYSICS BENEFITS

The following is intended to be a summary of some of the fringe benefits offered by One Physics. The corporation reserves the right from time to time to change or discontinue any one or more of the fringe benefits which it offers. When they differ, benefits listed here are superseded by those listed in the One Physics Employee Handbook.

1. Salary

First year and second year residents will receive annual salaries of \$64,000 and \$67,000 respectively.

2. Retirement

Beginning in year 2, residents will receive a 3% contribution to a 401k.

3. Health Insurance

Health insurance benefits (Currently through Cigna) are effective the first day of employment. Several different plan options (Gold, Silver, Bronze) with different deductible and premium levels are eligible to be selected.

4. Vision / Dental

Vision and dental plans are included. The Employee premium is covered by the company, but a portion of the additional premium for dependents is the responsibility of the employee.

5. Meetings

One Physics allows reimbursement for one meeting per year of up to \$3,000. Residents will be granted permission for one meeting and may be approved for travel to a second during the 2 year residency. Permission to attend a second meeting is typically approved when the resident is presenting their work at the meeting.

No travel arrangements should be made before approval by the program director. Any expenses associated with family members (spouse and children) will not be reimbursed. This includes meals and any extra costs associated with lodging. Reimbursement is for the single rate of the hotel. Unanticipated and unusual expenses for purposes not described herein shall be evaluated on an individual basis.

All reimbursable expenses must be documented with a receipt. Automobile mileage will be reimbursed according to the current IRS standards. No meeting will be paid for without prior

approval of the meeting. Corporate directed travel or seminars will not be deducted from your meeting benefits.

6. Professional Associations / Books / Journals

In keeping with the philosophy that residents are expected to keep current in the field, all resident employees are expected to maintain membership in the American Association of Physicists in Medicine (AAPM) at the national level

Reimbursement of books and/or journals may be reimbursed based upon prior approval by the Corporation.

7. PTO (Per One Physics Policy)

PTO includes Vacation and Sick time and is accrued at a rate of 10 hours per month for a total of 15 clinical days per year. In addition to the 15 clinical PTO days, 9 holidays (New Year's Day, MLK Day, Memorial Day, Juneteenth, 4th of July, Labor Day, Thanksgiving, Day after Thanksgiving, Christmas Day) are given. If the clinic is open on one of the holidays, a compensation day can be taken within 2 weeks of the holiday. Each period of vacation is subject to approval by the Corporation depending on availability of coverage.

Arrangements for PTO and Floating Holiday should be made with your supervisor or manager under the following guidelines:

- Late arrival or early departure – minimum 1 business day's notice
- 1-2 full-day absences – minimum 1 week's notice
- 3+ day absences – minimum 30 days' notice

No vacation may be rolled into the following year and any excess vacation time at the end of a residency year will be forfeited. Negative PTO is allowed (up to 40 hours but may not be negative at the end of Residency). PTO is to be used for on-site interviews for post-residency positions.

8. Extended or Cumulative Leave

Extended Leave, whether due to illness, injury, Maternity/Paternity shall be granted by mutual agreement between the resident and the program. Residents would be eligible for

FMLA after having worked 12 months and at least 1,250 hours. Residents in their first year would be eligible to request an unpaid personal leave of absence.

In either case, extended leave would necessitate a residency extension equaling to the total days missed less 40. Per CAMPEP Requirements, the maximum number of days leave without extending the duration of the residency is 40 days per year of all types of leave (PTO + Holiday = 24 + all other leave = total days). If the residency duration is to be extended (whether due to exceeding the 40 day limit or upon mutual agreement between the resident and the program), the duration of the agreed upon leave will be added to the end of the current Residency year to ensure that the full 24 months of training is completed in accordance with CAMPEP Standards.

RESTRICTIVE COVENANTS

Resident shall not, individually or on behalf of or in conjunction with any other individual or entity (except for or on behalf of Employer), directly or indirectly, undertake any of the following actions:

a. Non-Solicitation of Clients. Commencing on the Effective Date and continuing for a period of two (2) years after Resident's termination of employment with Employer, Resident shall not directly or indirectly, solicit or attempt to solicit any of the hospital or medical facility clients of Employer for the purpose of diverting such clients to an individual, company, or entity other than Employer.

b. Non-Solicitation of Employees. Resident shall not, directly or indirectly, solicit, hire, employ or contract with, as an employee or independent contractor, any present or future employee or future employee of Employer, for a period of two (2) years from the expiration or termination of Resident's employment hereunder.

c. Non-Affiliation. During the Term and continuing for a period of two (2) years after Resident's termination of employment with Employer, Resident shall not, within a 50 mile radius of any location where the Resident provided Services, provide services in competition with those offered by the Employer, or provide medical services to, or manage, operate, control, be employed by, provide administrative or clinical services to (including, but not limited to, medical director services), participate in, receive substantial financial assistance from (including, but not limited to, stipends, loans or compensation for administrative services), or be connected in any manner with the provision of services for, or with the ownership, management, operation or control of, any corporation, partnership, proprietorship, joint venture, or limited liability company that is owned, controlled, managed or financed by another entity engaged in a business that is the same as or similar to all or any part of the business of the Employer or the services provided by the Employer.

d. Trade Secrets and Confidential Information*. Resident acknowledges that during the term of this Agreement he shall have access to and shall acquire confidential information relating to the business and operations of Employer, including, but not limited to, customer lists

and records, policy manuals, business contracts and information, and other confidential and/or proprietary information relating to any of Employer's plans, methods of doing business and/or operations (collectively referred to herein as the "Confidential Information"). Resident acknowledges that all of the Confidential Information is solely the property of Employer and constitutes trade secrets and confidential information of it, and upon the expiration or termination of his employment with Employer for any reason, his knowledge of the Confidential Information shall enable him to compete with Employer in a manner likely to cause it irrevocable harm upon the disclosure of such matters. Resident hereby irrevocably represents, warrants, and covenants that commencing on the Effective Date and for a period of two (2) years after his employment with Employer ceases or is terminated for any reason: (i) he shall not use or disclose or allow to be used or disclosed, directly or indirectly, any of the Confidential Information to or by any individual, firm, corporation, or other entity, (ii) he shall return all of the Confidential Information in his possession to Employer within five (5) calendar days after the date he ceases to be employed by the Employer, and (iii) he shall certify to Employer that he has so complied.

* All educational material (notes, papers, presentations, study materials etc) do not qualify as Trade Secrets, Confidential Information or Intellectual Property