

RIT

College of Science

**Chester F.
Carlson Center
for Imaging
Science**

Graduate Student Handbook
MS and Ph.D.
Imaging Science

2024-2025 Academic Year

Revision 17

Summer 2024

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Welcome to the Chester F. Carlson Center for Imaging Science

It is my great pleasure to welcome you to the rich and fascinating study of Imaging Science! Imaging is central to our exploration, technological mastery, and understanding of the world. It includes advanced topics in artificial intelligence; perception by humans, animals, and machines; system engineering (including optical imaging, detection, image processing, and instrumentation); robotic/autonomous systems; remote sensing; visualization of astronomical data; multispectral interrogation of ancient artifacts; computational imaging; and computer vision, to name but a few disciplines. We call these areas of study across all things imaging the “imaging chain” - how photons traverse media, through optics, onto the detector plane, how images are formed, manipulated and analyzed, and finally, how these images and related products are perceived. You will become a genuine imaging scientist.

You have been selected to join this elite community which invents enabling technology and is in high demand by employers. Make no mistake, your graduate study will be challenging, and it will demand your full efforts and attention to graduate. Your study will also open many doors of opportunity, as there are myriad career paths and rewarding jobs in Imaging Science.

While you’re here, take the opportunity to explore the environs on and off campus. Rochester NY is home to more than 150 Optics, Photonics, and Imaging companies. Companies like to meet students! Go on field trips. Take advantage of the Industrial Associates Program to meet representatives and alumni from more than 50 companies from around the country. Give talks and present posters at technical conferences. Get involved with a student chapter of the SPIE and Optica, and attend department social events. You will connect with your graduate friends for the rest of your career in Imaging Science. They will help you in ways you cannot know now, so form strong bonds while you have the opportunity. Believe me, I speak from personal experience and still call many of my graduate peers my friends.

We are thrilled that you have taken up this challenge, and look forward to your transformation into an Imaging Science professional. The faculty and staff in the Chester F. Carlson Center for Imaging Science welcome you aboard!

With best wishes,

Jan van Aardt, Ph.D.
Professor and Director
Chester F. Carlson Center for Imaging Science
Rochester Institute of Technology

1. Introduction

The Chester F. Carlson Center for Imaging Science offers graduate programs leading to the Master of Science and the Doctor of Philosophy in Imaging Science. Graduate students can conduct research in a wide variety of areas, including astronomical imaging, biomedical imaging, color imaging, human vision and perception, image processing and computer vision, nanoimaging, optics, and remote sensing. The graduate handbook provides you with information about the academic programs, policies and procedures, and your responsibilities as a student. Our dedicated faculty and staff are available to assist you as you pursue your degree.

2. Program Administrative Contacts

Prof. Jan van Aardt, Center Director and Graduate Program Director

Office: Carlson 2264

Phone: 585-475-4229

Email: jvacis@rit.edu

Dr. Karen Braun, Associate Director

Office: Carlson 2246

Phone: 585-475-7323

Email: kmbcis@rit.edu

Prof. Anthony Vodacek, Graduate Program Coordinator (Coordinator for students with last names A-M)

Office: Carlson 3258

Phone: 585-475-7816

Email: axvpci@rit.edu

Prof. David Messinger, Graduate Program Coordinator (Coordinator for students with last names N-Z)

Office: Carlson 3128

Phone: 585-475-4538

Email: david.messinger@rit.edu

Assoc. Prof. Emmett Lentilucci, Chair, Graduate Admissions Committee

Office: Carlson 3132

Phone: 585-475-7778

Email: ejpci@rit.edu

Lori Hyde, Academic Coordinator

Office: Carlson 2274

Phone: 585-475-2786

Email: lhsse@rit.edu

Liz Coleman, Sr. Staff Assistant, Student Financial Assistant

Office: Carlson 2265

Phone: 585-475-7152

Email: lcmcis@rit.edu

3. Glossary

Center Director: Administrative and academic head for the Chester F. Carlson Center for Imaging Science

Graduate Program Director: The Center Director is also responsible for the overall direction of the graduate program

Graduate Program Coordinator(s): Responsible for implementing the graduate program

Academic Coordinator: Responsible for support of graduate students and administrative functions for the graduate program

Faculty Advisor: Academic supervisor for the students in both the PhD and MS programs

Graduate Faculty: RIT Faculty who can serve as Imaging Science faculty advisors, includes Core Program and Research Faculty in Imaging Science plus Extended Faculty

Department Faculty: Core Program Faculty who are tenured or tenure track, plus non-tenure track Research Faculty, both in the Center for Imaging Science

Sr. Staff Assistant: The admin responsible for student employment and financial support processing

4. Graduate Admission Requirements

Imaging science is a rigorous program encompassing diverse scientific disciplines. Students with strong backgrounds in math, physics, and computing are well suited for the program. Undergraduate preparation leading to a Bachelor of Science degree in engineering, computer science, applied mathematics, physics, or other sciences is usually required, but exceptional students from different fields may be accepted. All students admitted to the doctoral program in imaging science must have completed courses in the following areas:

- Linear Algebra and Calculus (one year, three semesters including multivariable/vector calculus preferred)
- Mechanics, Electromagnetism, and Quantum Physics
- Computer programming (e.g., C++, Python, MATLAB)

Admissions decisions are made by a committee comprising graduate faculty in the Carlson Center for Imaging Science. To be admitted, students must have a strong record of academic achievement in their mathematics, physics, and computing classes from their undergraduate institutions, as indicated by official transcripts; demonstrate proficiency on the Graduate Record Examination (GRE; only required if applying for an assistantship); and letters of recommendation from two people well-qualified to judge their abilities for graduate study.

The following URL outlines the graduate admission process:

<https://www.rit.edu/admissions/graduate>

5. Financial Assistance

Graduate assistantships and tuition remission scholarships are available to highly qualified Ph.D. students. These students are typically funded as Graduate Teaching Assistants (GTA) during the fall and spring semesters of their first academic year and as Graduate Research Assistants (GRA) thereafter. The GTA stipend for a newly accepted Ph.D. student during the fall and spring semesters of the 2024-2025 academic year is \$24,375. Beginning in the summer term of the 2024-2025 academic year, students are supported as a GRA with the funding coming from research grants obtained by the student's research advisor, not the Center. Therefore, by the end of the second semester of the first year, students seeking GRA support must find a faculty research advisor willing to advise them and support them with research grant funding. At the MS level, a limited number of tuition scholarships and assistantships may be available to highly qualified newly accepted students.

Applicants seeking financial assistance from the Center must submit all application documents to the Office of Graduate Enrollment Services by January 15 for the next academic year beginning in late August. Students whose native language is not English must demonstrate proficiency in English, as evidenced, for example, by a minimum TOEFL score of 600 (paper-based), 250 (computer-based), or 100 (Internet-based). The minimum IELTS score is 7.0. Students whose native language is not English are advised to obtain as high a TOEFL or IELTS score as possible if they wish to apply for a teaching or research assistantship. RIT may require students with low TOEFL scores to take additional non-credit English language classes; the tuition for these English courses is paid by the student.

6. MS Imaging Science Program

The Master of Science in Imaging Science provides students with an advanced curriculum in topics related to Imaging Science and prepares them for a career in research or product development in the imaging industry. The Master of Science degree requires the completion of 30 credits and can be obtained by completing a thesis (Thesis Option) or a research project (Project Option). The Master of Science degree can be completed entirely online.

<https://www.rit.edu/study/imaging-science-ms>

6.1 MS Thesis Option

Typically, all full-time MS students on campus pursue the Thesis Option. MS students who pursue this option must complete IMGS-617 Image Processing and Discrete Fourier Methods, three additional core courses from the five remaining, and additional elective courses. The MS degree requires a minimum of six credits of Research & Thesis (IMGS-790), two of which are satisfied by the Imaging Science Seminar sequence. A minimum of 21-course credits is required. The additional credits required to total 30 are met by course or research credits as determined by the student's plan of study, developed jointly with their advisor. Table 6.1 shows a typical MS course sequence.

Table 6.1 Imaging Science Thesis Option, MS degree, typical course sequence

	Course	Sem. Cr. Hrs.
First Year		
IMGS-617	Image Processing and Discrete Fourier Methods	2
<i>Choose three of the following core courses (6 credits):</i>		
IMGS-619	Radiometry*	2
IMGS-620	The Human Visual System*	2
IMGS-621	Computer Vision*	2
IMGS-633	Optics for Imaging*	2
IMGS-613	Noise and Systems Modeling*	2
IMGS-606	Imaging Science Seminar 1	1
IMGS-607	Imaging Science Seminar 2	1
	Elective	3
	Elective	3
	Elective	3
IMGS-790	Research and Thesis	1
Second Year		
	Elective	3
	Elective	3
IMGS-790	Research and Thesis	2
IMGS-790	Research and Thesis	2

*Asterisk indicates core course. A core course not used as one of required core courses may be applied to electives

6.2 MS Thesis Committee

The MS Thesis Committee is composed of a minimum of three people: the student's Graduate Faculty research advisor and two additional members who hold at least an MS in a field relevant to the student's research. At least one of the committee members must be from the Core Program Faculty, and can be the student's MS thesis advisor. Two or more of the committee members must be from the Graduate Faculty (Core Program Faculty, Research Faculty or Extended Faculty). A student may optionally have a committee member who is not a member of the RIT faculty by submitting their CV to the Graduate Program Coordinator for review and approval.

Table 6.2 summarizes key events and milestones in the career of an Imaging Science MS Thesis student. Except for the hard deadline for participation in Commencement, the dates in the timeline are representative. Individual students will have different timelines for graduation depending on circumstances. The typical MS Thesis student finishes their degree in about 2.5 years.

Table 6.2 MS Thesis Option Milestones

When	What	Responsible
Application Year	Application decision; matriculate into program; financial support established	Applicant, Admission Committee, Center Staff
Year 1		
July/Aug	Register for classes	Student, Academic Coordinator, Graduate Program Coordinator
July/Aug	Teaching Assistant or Research Assistant duties assigned (if applicable). Documents completed to work on campus and receive assistantship	Center Director, Sr. Staff Assistant, Student Employment Office, Graduate Program Coordinator, Student
Spring Term	Research Advisor selection by student. Student informs Graduate Program Coordinator	Student (note until Advisor is selected, Graduate Program Coordinator serves in this role).
End of Spring Term	Submission of initial Plan of Study and submit transfer credit request (if applicable) to Graduate Program Coordinator	Student, Faculty Advisor, Graduate Program Coordinator
End of Summer Term	Formulate research topic; Research Committee formed	Student, Faculty Advisor, Graduate Program Coordinator
Year 2 until completion		
Every term	Periodic Research Committee briefings	Student, Faculty Advisor, Research Committee
At least 4 weeks prior to defense	Student to provide to Graduate Program Coordinator an electronic copy of thesis defense announcement with abstract, date, time, and location. Student will distribute draft thesis to Research Committee	Student, Graduate Program Coordinator, Academic Coordinator
Midway through term	Thesis defense	Student, Research Committee
By April 15 for Spring term graduation	Thesis sign-off and submission for binding to Wallace Library and UMI/Proquest	Student, Research Committee

End of term in which all degree requirements are met	Certification of the MS degree	Center Director, Academic Coordinator
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6.3 MS Project Option

For those students with industry experience, the MS Project Option may be appropriate. Rather than a student's writing a research thesis, the project option involves two additional courses, one of which is a systems project course where the student conducts a systems project with a Faculty Advisor. Online students most commonly pursue this option. All students who pursue this option must complete IMGS-617 Image Processing and Discrete Fourier Methods, three additional core courses from the remaining five, 7 graduate electives (the equivalent of six 3-credit courses and a 1-credit independent study course), and the systems project course.

Table 6.3 Imaging Science Project Option, MS degree, typical course sequence

Course		Sem. Cr. Hrs.
First Year		
IMGS-617	Image Processing and Discrete Fourier Methods	2
<i>Choose three of the following core courses (6 credits):</i>		
IMGS-619	Radiometry*	2
IMGS-620	The Human Visual System*	2
IMGS-621	Computer Vision*	2
IMGS-633	Optics for Imaging*	2
IMGS-613	Noise and Systems Modeling*	2
	Elective	3
	Elective	3
	Elective	3
	Independent Study	1
Second Year		
	Elective	3
	Elective	3
	Elective	3
IMGS-740	MS Systems Project Paper	3
Total Semester Credit Hours		30

*Asterisk indicates core course. A course not used as one of the required core courses may be applied to electives

6.4.1 MS Online Program

The MS Imaging Science degree can be obtained entirely online by taking courses through distance learning. The program is identical to the on-campus MS program Project Option.

Many Imaging Science online courses are captured and recorded as they are being taught in the classroom in real-time using various Internet technologies. Online students will need access to broadband Internet and be willing to manage the challenges of learning advanced technical

material without face-to-face interaction with the instructor and fellow students. Since these online courses are recorded, they can be viewed by an online student after the class, offering flexibility to allow students to accommodate their work schedules.

Not all Imaging Science and elective courses are taught online, so there are fewer electives in the online program. Applicants should also consider their learning styles and self-discipline when attempting this mathematics- and physics-intensive program. Please keep in mind that it is much easier for on-campus students to form study groups and meet informally for review sessions.

7. Ph.D. Imaging Science Program

The Ph.D. curriculum offers students a thorough course of study and research, structured and directed by experts in the field. Graduates of the program will contribute to an increase in the fundamental body of knowledge in imaging science. They will acquire the capabilities, skills, and experience to continue to expand the discipline's limits and meet future scholarly, industrial, and government demands in the field. A link to the Imaging Science Ph.D. program of study can be found here:

<https://www.rit.edu/study/imaging-science-phd>

All students must complete a minimum of 60 semester credit hours of coursework and research and write and defend a dissertation. Students must have a minimum of 32-course credits, and a minimum of 18 research credits, with the additional credits required to total 60 met by course or research credits as determined by the students' plan of study, developed jointly with their Faculty Advisor. The core curriculum includes courses that span and integrate a common body of knowledge essential to understanding imaging processes and applications. Courses are defined by the student's study plan and must include the core courses plus elective courses in areas such as astronomical imaging, biomedical imaging, color imaging, cultural heritage imaging, human vision and perception, image processing and computer vision, nanoimaging, neural networks as applied to imaging problems, optics, and remote sensing.

Students may take a limited number of credit hours in other departments, with approval from the Graduate Program Coordinator and Faculty Advisor. Students also must complete research credits, including two credits of research associated with the graduate seminar course. Graduate elective courses offered by the Center for Imaging Science and other RIT academic departments in fields closely allied with imaging science allow students to concentrate their studies in a range of imaging science research and imaging application areas.

It is the student's responsibility to understand the requirements of the imaging science degree program. All degree requirements are published yearly in the RIT catalog. Alterations in an individual student's requirements (course substitutions, transfer credit, requirement waivers, credit by examination) must receive prior approval in writing from the Graduate Program Coordinator. Questions regarding changes made in the curriculum during a student's program of study should be directed to the student's assigned Graduate Program Coordinator.

Table 7.1 Required Core Courses in PhD program

Course Number	Class Name	Credit Hours
IMGS-606, 607	Imaging Science Graduate Seminar I, II	2**
IMGS-609	Graduate Laboratory I	2
IMGS-613	Noise and System Modeling	2
IMGS-617	Image Processing and Discrete Fourier Methods	2
IMGS-619	Radiometry	2
IMGS-620	The Human Visual System	2
IMGS-633	Optics for Imaging	2
IMGS-621	Computer Vision	2

**The seminar courses count toward research credit requirements.

7.1 Advancement to candidacy

Advancement to Ph.D. candidacy proceeds through the following steps.

- Faculty Advisor selection
- Submission and approval of preliminary study plan
- Passing a qualifying exam, with written and oral components
- Study plan revision based on outcome of qualifying exam and Faculty Advisor recommendation
- Research committee appointment
- Candidacy exam based on thesis proposal

RIT Policy regarding the Ph.D. program requirements can be found at:

<https://www.rit.edu/policies/d120#vi-doctoral-degree>

7.2 Ph.D. Qualifying Exam

The Ph.D. Qualifying Exam is designed to test the student's understanding of fundamental imaging science concepts as taught in the required core courses and experienced through the first-year research placement. The format of the Ph.D. Qualifying Exam will consist of two parts: (1) an oral presentation and examination and (2) a written report. The written report will be provided to the faculty evaluation committee for evaluation at least one month prior to the oral presentation and exam. In the oral phase of the qualifying exam, students will present a summary of the research experiences undertaken in Imaging Science during the first year of study. The faculty evaluation committee will ask questions about the research as well as its relationship to the core curriculum; faculty questions exploring the relationship between the

research conducted by the student and the core curriculum may be drawn from any of the core courses (specifically, this may include material from IMGS-613, -617, -619, -620, -621, and -633). The written report portion of the qualifying exam process also will document the research experiences undertaken in both semesters of the first year of study, and the same faculty evaluation committee will assess the written summary.

Students will be required to attest to their conduct on any submitted material for the Qualifying Examination by signing the following statement, *"I have neither given nor received unauthorized assistance on this examination."*

Students who pass the Ph.D. Qualifying Exam continue to work toward Candidacy. Students who receive a conditional pass on the Ph.D. Qualifying Exam will be required to address a deficiency through remedial actions as communicated by the Program Director. Remedial actions must be completed within a year; if the remedial actions are not completed within a year, as a substitute, the student may retake the Ph.D. Qualifying Exam. Failure to complete the remedial action will result in suspension from the Ph.D. Program. Remedial Action may take the form of conducting research during the summer after the first year, or the following fall, with another oral examination and written report by the end of the term. Students who do not pass the Ph.D. Qualifying Exam on the first attempt are allowed to make a second attempt. Retaking of the examination after failure requires completion of the full year process described above.

A first year Ph.D. student who does not take the Qualifying Exam in their first year, without informing the Graduate Program Coordinator and receiving previous permission from the Center Director to do so, will have failed their first attempt at the Qualifying Examination.

RIT Policy D12.0 states: "Students must successfully complete a qualifying exam by the beginning of the third year of full-time study or its equivalent. Students are permitted two attempts to pass the exams."

If the faculty decision following the second attempt at the qualifying exam is that the student did not pass the qualifying exam and should not be permitted to continue in the doctoral program, the Faculty Advisor and Graduate Program Coordinator will counsel the student about options, including the pursuit of an MS degree. If the faculty decision is to permit the candidate to continue in the doctoral program, then the student continues in the program with ongoing study plan updates each semester, research committee appointment, candidacy exam, and, finally, dissertation defense.

Exceptions to this procedure will be considered on a case-by-case basis through discussion with the Graduate Program Director.

7.3 Ph.D. Thesis Committee

Once the student has passed the Ph.D. qualifying exam and is well along in the process of formulating a dissertation research proposal (typically during the second or perhaps the third year of study), the student, in consultation with their Faculty Advisor, must present a request to the Graduate Program Coordinator for the appointment of a Research Committee. The committee must include a minimum

of four people, including the Faculty Advisor, one other member of the Graduate Faculty, a person competent in the field of research (this committee member may also be a member of the Graduate Faculty), and the Provost's Representative ("external chair"). The external chair must be a tenured member of the RIT faculty who holds a Ph.D. and is not a Graduate Faculty member of the Center for Imaging Science. All Ph.D. research committees must include at least one department faculty member. Further, if the Faculty Advisor is a member of the Graduate Faculty with a home department other than the Center, then the external chair cannot have the same home department as the Faculty Advisor. The external chair is appointed by a request initiated by the Graduate Program Director to the Dean of the Graduate School prior to the candidacy exam. A student may have a committee member who is not a member of the RIT faculty by submitting the proposed member's CV to the Graduate Program Coordinator for review and approval by the Graduate Curriculum Committee. The research committee will supervise the student's research, including review of the research proposal (typically as part of the Ph.D. candidacy exam), meeting with the student during the course of the research, and conducting the dissertation defense.

7.4 Research proposal

The student and the research advisor select a research topic for the dissertation. The proposed research must be original and publishable. Although the topic may deal with any aspect of imaging, the research is usually concentrated in an area of current interest within the Center. The research proposal is presented to the student's Ph.D. research committee during the candidacy exam at least six months before the dissertation defense.

7.5 Residency

All students in the program must spend at least two consecutive terms (summer excluded) as full-time resident students to be eligible to receive the doctoral degree. A full-time academic workload is defined as a minimum of nine academic credits per term or an equivalent amount of research, as certified by the student's Graduate Program Coordinator.

7.6 Exceptions to residency requirement

If circumstances warrant, the residency requirement may be waived via petition to the student's Graduate Program Coordinator, who will decide on the student's petition in consultation with the student's Faculty Advisor and Graduate Faculty. The request must be submitted at least nine months before the thesis defense.

7.7 Time limitations

All candidates for a doctoral degree must maintain continuous enrollment during the research phase of the program. Such enrollment is not limited by the maximum number of research credits that apply to the degree. Typically, full-time students complete the course of study for the doctorate in approximately three to five years. A total of seven years is allowed to satisfy all of the requirements for the Ph.D. degree after passing the Qualifying Exam.

7.8 Final Examination of the Dissertation (Ph.D. Dissertation Defense)

The Faculty Advisor, on behalf of the student and the student's Research Committee, must notify the Graduate Program Coordinator of the scheduling of the final examination of the dissertation by

forwarding to the Graduate Program Coordinator the title and abstract of the dissertation and the scheduled date, time, and location of the examination. The final examination of the dissertation may be scheduled no sooner than six months after the date on which the student passed the candidacy exam (at which the dissertation proposal was presented and approved).

Barring exceptional circumstances, the examination may not be scheduled sooner than four weeks after the formal announcement (e.g. Center-wide hallway postings and email broadcast) has been made. Exceptions to this must be approved by the Graduate Program Coordinator.

The final examination of the dissertation is open to the public and is primarily a defense of the dissertation research. The examination consists of an oral presentation by the student, followed by questions from the audience. The Thesis Committee may also elect to question the candidate following the presentation privately. The Research Committee will immediately notify the candidate and the Graduate Program Coordinator of the examination result by submission of a signed form that becomes part of the student's academic file.

7.9 En Route to an Imaging Science Ph.D. at RIT: Key Events and Milestones

Table 7.2 summarizes key events and milestones in the career of an Imaging Science Ph.D. student at RIT.

Table 7.2 Ph.D. Milestones (continued next page)

When	What	Responsible
Application Year	Application decision; matriculate into program; financial support established	Applicant, Admission Committee, Center Staff
Year 1		
July/Aug	Register for classes	Student, Academic Coordinator, Graduate Program Coordinator
July/Aug	Teaching Assistant or Research Assistant duties assigned (if applicable). Documents completed to work on campus and receive assistantship	Graduate Program Coordinator, Associate Director, Sr. Staff Assistant, Student Employment Office, Student
By start of Fall Term	Core courses and research placement	Student, Graduate Program Coordinator, Faculty Advisor
Spring Term	Core courses and research placement	Student, Graduate Program Coordinator, Faculty Advisor
By no later than end of spring term	Permanent Research Advisor selection by student. Student informs Graduate Program Coordinator	Student, Graduate Program Coordinator, Faculty Advisor

During Spring Term finals	Ph.D. Qualifying Exam	Student, Graduate Program Coordinator, Faculty Exam Committee
The week after the Ph.D. Qualifying Exam	Ph.D. Qualifying Exam Pass/Fail Decision	Graduate Faculty, Director, Graduate Program Coordinator
Summer Term	Submission of initial Plan of Study and submit transfer credit request (if applicable) to Graduate Program Coordinator	Student, Faculty Advisor, Graduate Program Coordinator
End of Summer Term	Formulate research topic	Student, Faculty Advisor, Graduate Program Coordinator
Year 2		
Fall Term	Formulate Dissertation Proposal; Research Committee formed	Student, Faculty Advisor, Graduate Program Coordinator
Spring Term	Research and Candidacy Exam Committee appointed	Student, Faculty Advisor, Graduate Program Coordinator (Dean of Graduate Studies approval)
Summer Term	Submit updated Study Plan (if necessary)	Student, Faculty Advisor
Years 2+		
As needed	Periodic Research Committee briefings	Student, Research Committee
4 weeks prior to candidacy exam	Circulate dissertation proposal to research committee	Student
Preferred, prior to end of first semester in third year. Required to be at least 6 months prior to Ph.D. Defense	Proposal defense and candidacy exam	Student, Research Committee
Final Year		
As needed	Periodic Research Committee briefings	Student, Research Committee
At least 4 weeks prior to defense	Announce dissertation defense	Student, Faculty Advisor, Graduate Program Coordinator, Academic Coordinator
At least 4 weeks prior to defense	Circulate dissertation to committee	Student, Research Committee

By April 1 for participation in May Graduation	Dissertation defense with conditional pass	Student, Research Committee
April 15 for May Graduation	Dissertation submitted to Wallace Library and UMI/ProQuest with proof of submission delivered to Graduate Program Coordinator	Student
End of term in which all requirements are met	PhD requirements certification	Center Director, Academic Coordinator

8. Plans of Study

Please see the following examples for approved Ph.D. and MS Plans of Study. Type over entries as appropriate to create your individualized plan of study. An initial plan of study can be created at any time but should be done before registering for your second semester of your program. Updates can be made later. Be sure to keep a current plan of study on file with your Faculty Advisor and the Graduate Program Coordinator. The following Plans of Study are populated for a student beginning their program this academic year but can (and should) be modified to match the student's plan.

Sample pages to follow.

Imaging Science PhD Plan of Study

August 2024

Name	<i>Enter name</i>															
RIT Username	<i>Enter username</i>															
Matriculating Term	<i>Enter term admitted</i>															
Academic Year			2024			2025				2026			2027			2028
Term		Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum
Term Code		2241	2245	2248	2251	2255	2258	2261	2265	2268	2271	2275	2278	2281	2285	2288
Required Courses																
IMGS-617	Image Process & Discrete Fourier Methods	2														
IMGS-619	Radiometry	2														
IMGS-620	The Human Visual System	2														
IMGS-633	Optics for Imaging		2													
IMGS-621	Computer Vision		2													
IMGS-613	Noise and System Modeling		2													
IMGS-609	Graduate Laboratory I	2														
Elective Courses																
IMGS-643	Math Methods	1														
XXXX-XXX	Title					2										
XXXX-XXX	Title				3											
XXXX-XXX	Title				3											
XXXX-XXX	Title					3										
XXXX-XXX	Title							3								
XXXX-XXX	Title								3							
Transfer Courses (maximum 30 credits)																
(insert rows as necessary)																
Research Credits																
IMGS-606	Graduate Seminar I	1														
IMGS-607	Graduate Seminar II		1													
IMGS-890	Research and Thesis	2	2	0	3	3	0	3	3	0	3	3	4			
	PhD Qualifying Exam			X												
	PhD Candidacy Exam								X							
	Thesis Defense												X			
	Total Credits During Term	12	9	0	9	8	0	9	3	0	3	3	4			
	Total Course Credits (min. 32)	32														
	Total Research Credits (min. 18)	28														
	Total Credits (min. 60)	60														
Advisor	<i>Name, signature, and date</i>															
Coordinator	<i>Name, signature, and date</i>															

Imaging Science MS (Thesis) Plan of Study

August 2024

Name																
RIT Username	<i>Enter username</i>															
Matriculating Term	<i>Enter term admitted</i>															
Academic Year		2024			2025			2026			2027			2028		
Term		Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum
Term Code		2241	2245	2248	2251	2255	2258	2261	2265	2268	2271	2275	2278	2281	2285	2288
Required Courses																
IMGS-617	Image Processing & Discrete Fourier	2														
IMGS-619	Radiometry	2														
IMGS-620	The Human Visual System	2														
IMGS-633	Optics for Imaging		2													
IMGS-621	Computer Vision															
IMGS-613	Noise and System Modeling															
Elective Courses																
IMGS-643	Math Methods	1														
XXXX-XXX	Title	3														
XXXX-XXX	Title		3													
XXXX-XXX	Title		3													
XXXX-XXX	Title			3												
XXXX-XXX	Title				3											
Transfer Courses (maximum of 6 credits)																
(insert rows as necessary)																
Research Credits																
IMGS-606	Graduate Seminar I	1														
IMGS-607	Graduate Seminar II		1													
IMGS-790	Research and Thesis			1	1	1	1									
	Thesis Defense							X								
	Total Credits During Term	11	9	1	4	4	1									
	Total Core Course Credits (min. 8)															
	(Fourier required)															
	Total Elective Course Credits (min. 13)															
	Total Course Credits (min. 21)															
	Total Research Credits (min. 6)															
	Research or Elective (min 3)															
	Total Credits (min. 30)															
Advisor	<i>Name, signature, and date</i>															
Coordinator	<i>Name, signature, and date</i>															

Imaging Science MS (Project) Plan of Study

August 2024

Name															
RIT Username	<i>Enter username</i>														
Matriculating Term	<i>Enter term admitted</i>														
Academic Year		2024				2025			2026			2027		2028	
Term		Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring	Sum	Fall	Spring
Term Code		2241	2245	2248	2251	2255	2258	2261	2265	2268	2271	2275	2278	2275	2278
Required Courses															
IMGS-617	Image Processing & Discrete Fourier Methods	2													
IMGS-619	Radiometry	2													
IMGS-620	The Human Visual System														
IMGS-633	Optics for Imaging		2												
IMGS-621	Computer Vision														
IMGS-613	Noise and System Modeling	2													
Elective Courses															
XXXX-XXX	Title	3													
XXXX-XXX	Title		3												
XXXX-XXX	Title		3												
XXXX-XXX	Title		1												
XXXX-XXX	Title				3										
XXXX-XXX	Title				3										
XXXX-XXX	Title					3									
Transfer Courses (maximum of 6 credits)															
(insert rows as necessary)															
Project Course															
IMGS-740	Systems Project Paper					3									
Total Credits During Term		9	9	0	6	6	0	0	0	0					
Total Core Course Credits (min. 8)		8													
(Fourier required)															
Total Elective Course Credits (min. 19)		19													
Project Course (3 credits)		3													
Total Credits (min. 30)		30													
Advisor															
Name, signature, and date															
Coordinator															
Name, signature, and date															

9. Graduate Program Faculty

The following faculty members constitute the Graduate Program Faculty of the Chester F. Carlson Center for Imaging Science and are eligible to serve as thesis advisors for students studying for their MS or Ph.D. in Imaging Science.

9.1 Core Program and Research Faculty (home department is the Center for Imaging Science):

Charles Bachmann, Professor
Dimah Dera, Assistant Professor
Gabriel Diaz, Associate Professor
Roger Easton, Professor
James Ferwerda, Associate Professor
Michael Gartley, Research Assistant Professor
Aaron Gerace, Research Assistant Professor
Richard Hailstone, Associate Professor
Joseph Hornak, Professor, Imaging Science and Chemistry
Emmett Ientilucci, Associate Professor
Joel Kastner, Professor
Bartek Krawczyk, Assistant Professor
John Kerekes, Professor
Robert Kremens, Research Faculty
David Messinger, Professor
Zoran Ninkov, Professor
Jeff Pelz, Professor
Jie Qiao, Associate Professor
Carl Salvaggio, Professor
Grover Swartzlander, Professor
Jan van Aardt, Professor
Anthony Vodacek, Professor

9.2 Extended Faculty (home department is outside the Center for Imaging Science):

Iris Asllani, Research Associate Professor, Biomedical Engineering
Nathan Cahill, Associate Professor, School of Mathematical Sciences
Susan Farnand, Assistant Professor, Color Science
Ernest Fokoué, Associate Professor, School of Mathematical Sciences
Andrew Herbert, Professor, Psychology
Matthew Hoffman, Assistant Professor, School of Mathematical Sciences
Jeyhan Kartaltepe, Assistant Professor, School of Physics and Astronomy
Cristian Linte, Associate Professor, Biomedical Engineering
Dongfang Liu, Assistant Professor, Computer Engineering
Nishant Malik, Assistant Professor, School of Mathematical Sciences
Richard O'Shaughnessy, Associate Professor, School of Mathematical Sciences
Shima Parsa, Assistant Professor, School of Physics and Astronomy
Flip Phillips, Professor, Motion Picture Science
Eli Saber, Professor, Electrical and Microelectronic Engineering
Andreas Savakis, Professor and Head, Computer Engineering
Brian Tomaszewski, Associate Professor, Information Sciences and Technologies

10. Definitions, Policies, and Procedures

All RIT policies and regulations as they appear in RIT publications apply in full to students in the Chester F. Carlson Center for Imaging Science. There are, however, a few additional policies and practices that apply only to Imaging Science. For your guidance, this publication contains an outline of this information.

RIT Policies and Procedures apply to all students and can be found at the following URL:

<https://www.rit.edu/policies/>

10.1 Academic Standards/Grades

A cumulative Grade Point Average (GPA) of 3.0 or above must be achieved within one term of full-time study, or the equivalent (9 credits), to be in good academic standing. If a student's program cumulative GPA is less than 3.0 the student must raise their GPA to a 3.0 within one term of full-time study (9 credits) or the student will be suspended. A grade of C-, D or F at the graduate level does not count as a completed course. The course must be retaken, if it is a program requirement. Graduate courses cannot be repeated to improve a grade; if a course is repeated to satisfy program requirements, the original grade will continue to be part of the student's program cumulative GPA.

10.2 Advisor

Faculty Advisors are assigned to all Imaging Science students. Advisors are prepared to assist students with issues regarding curriculum requirements, elective choices, transfer options, RIT support facilities, and concerns of a more personal nature (such as managing your time effectively, making the adjustment to graduate school life or coping with the unexpected). We strongly urge students to establish a firm relationship with their Faculty Advisors soon after you begin your program of study in Imaging Science. First year students are assigned to one of the Graduate Program Coordinators, who will advise them over the course of their graduate studies. In the first two semesters, students in the Ph.D. program are required to complete a research experience (2 credits per semester) in a research group. The faculty mentor in each research group experience of the first two semesters will also serve as an advisor to the student. During the first year, the students should select a member of the Graduate Program Faculty who will serve as their ongoing Faculty (or Project) Advisor, who then also acts as primary academic advisor and funds their GRA. The student will inform the Graduate Program Coordinator when they have identified their ongoing faculty advisor; this task should be completed by no later than the end of the second semester of study.

10.3 Building Access

Students enrolled in graduate programs in the Chester F. Carlson Center for Imaging Science have swipe card access to the building and specific rooms through their RIT ID card. Access to labs is based on need and requires approval of the faculty member responsible for the lab.

10.4 Certification of Degree

Certification of a graduate degree requires verification that the student has completed all course and research credits required for the degree based on an approved plan of study. The student must satisfy the residency requirement and achieve a minimum program cumulative grade point average of 3.00 (a

B average). Full payment or satisfactory adjustment of all financial obligations is required. All materials must be returned to the Wallace Library.

10.5 Change of Program

Enrolled students who wish to change their program (MS to Ph.D., or Ph.D. to MS) should consult with the Graduate Program Coordinator.

10.6 Class Attendance

No record of attendance is kept by the Chester F. Carlson Center for Imaging Science administrative offices. Reports of absences are not required. However, a record of absences may be kept by any faculty member and may be used by that faculty member to determine a grade. Non-attendance does not constitute withdrawing from a class and failure to complete course requirements will result in a failing grade.

10.7 Cooperative Education/Internships

Cooperative education experiences are not required for degree completion for students in the MS or Ph.D. in imaging science at RIT. However, opportunities are available to students and may be pursued with permission of the student's Advisor and Graduate Program Coordinator. The following steps are required to participate in co-op:

- GPA of 3.0 or higher
- Offer letter and position description from potential employer
- Approval of Faculty Advisor
- Approval of Graduate Program Coordinator
- International students are advised to meet with ISS regarding eligibility
- Register position on Co-op website
- Enroll in Co-op through SIS
- Evaluation of Co-op experience by supervisor and student
- Grade of Satisfactory (S) or Unsatisfactory (U) assigned

10.8 Course Exemption

An instructor may recommend approval of a course requirement exemption based upon previous experience or coursework. However, this exemption does not alter the total credit requirement for the degree program. Requests for course exemption must be initiated by the student, in writing, to the Graduate Coordinator. Approval of the request is subject to graduate faculty consensus.

10.9 Course Substitution and Non-Imaging Science Electives

It is expected that a minimum of 12 credits of elective courses will be IMGs courses. To substitute alternative courses for required (core) curriculum courses, or to count elective courses from other departments (e.g., Business, Liberal Arts) that appear to fall outside the field of imaging science, permission must be granted by the Graduate Coordinator (possibly subject to the consensus of the Carlson Center's Graduate Faculty). To initiate a request of this nature, the student must provide his or

her Faculty Advisor with a description of the desired course. A written rationale which describes the importance of a desired non-imaging science elective in terms of career goals and curriculum specializations may be necessary. This justification is expected to take place in the context of the student's full study plan (indicating all courses to be taken to satisfy the degree requirements). Approvals for substitutions for required courses are normally subject to graduate faculty consensus. Note that, for the MS program, a maximum of 6 credits may be taken outside the Center.

10.10 Course Withdrawal

If a student wants to stop participating in a class following the six-day add/drop period, the student must officially withdraw (drop with penalty) from the course and will receive a grade of W. This grade will be reflected on the student's permanent record. Withdrawal from a course which causes a student to carry less than 9 academic credits (or causes loss of full-time status) may result in suspension of the student's scholarship. Students are encouraged to consult with their Faculty Advisor and/or the Graduate Program Coordinator prior to withdrawing from a course.

A course withdrawal resulting in a W grade may be obtained through the eleventh week of the semester only. Following that date, a request for a late withdrawal form must be signed by the professor of the course, the Director of the Center, and the Dean of the College of Science. A rationale for late withdrawal must be provided.

10.11 Credit by Exam

With the approval of the Graduate Program Coordinator, students with an undergraduate degree in imaging science (or related fields) can request credit by examination for certain graduate courses offered by the Center, provided there is substantial curriculum overlap with the corresponding undergraduate course. Credit for graduate courses also may occasionally be granted by examination in the event that the student petitions an instructor to administer the exam. A Credit by Examination form must be completed, fee paid to Student Financial Services, and filed with the department prior to taking the exam. The exam is pass/fail. The notation on a student's permanent record is X (examination) and does not affect the RIT grade point average.

10.12 Credit/Course Limitations

Students may not enroll in more than 18 credit hours per semester; overloads require the approval of the Graduate Program Coordinator. Tuition is charged per credit hour for each credit from 1 to 11 credits. A set tuition charge is applied for 12 through 18 credits. The Graduate Program Coordinator may limit the total number of credit hours a student may take per term and, in the event of probationary academic standing, may require enrollment in specific courses. Teaching and research assistants may not register for more than 10 course credits plus one research credit without prior approval of the Graduate Program Coordinator.

Students must consult with their Faculty Advisor or Graduate Coordinator for permission to take courses that are not part of an approved plan of study. If a student is receiving a tuition scholarship, the tuition for courses that are not approved may not be paid by the scholarship. Credit bearing courses taken for an Audit grade will not be covered under tuition scholarships. Student Activity fees, parking fees, health fees, and fees for Activity/Wellness courses are not covered by a student's

tuition scholarship.

10.13 Email/Communication

Important information will be sent to your RIT email and through Center for Imaging Science distribution lists. You are encouraged to check your RIT email daily, or forward all RIT email to an address that you do check daily.

10.14 Graduate Program Faculty

The term "Graduate Program Faculty" (or sometimes "Graduate Faculty") as used in this document includes: faculty members with direct appointments (tenure or tenure-track) to the Chester F. Carlson Center for Imaging Science within the RIT College of Science; faculty members from other departments and colleges at RIT who have been appointed to the Graduate Faculty in the Center; and the Center's research faculty. These faculty are identified in Section 9.2 of this document.

10.15 Graduate Student Offices

Graduate students are assigned offices on a space-available basis. Full-time Ph.D. students with graduate assistant responsibilities are given priority.

10.16 Imaging Science Seminar

Throughout the academic year, seminars are given on Wednesdays in the Carlson Auditorium CAR 1125. Seminar attendance is required of first-year graduate students as part of their Graduate Seminar I & II classes, and strongly recommended for all students. The seminars are open to the public and announced on the CIS web site.

10.17 Independent Study

Independent Study provides students the opportunity to learn about a topic not covered in the regular course offerings of RIT. A request form must be completed and signed by the student and the faculty responsible for evaluating the Independent Study, and by the Graduate Program Coordinator. Approval from the Graduate Program Coordinator is required before enrolling in the independent study course.

10.18 Intersession, Summer Term Expectations

Students are not required to be enrolled during Intersession or summer term. Students receiving an assistantship must consult with their Faculty Advisor regarding expectations during Intersession and summer term.

10.19 Leave of Absence/Institute Withdrawal

Students wishing to take a leave of absence should consult with their Faculty Advisor and the Graduate Program Coordinator. They should also review the RIT policy at <https://www.rit.edu/policies/d021>.

10.20 Maintenance of Registration

Candidates for the doctoral degree must maintain continuous enrollment during the research phase of the program. Such enrollment is not limited by the maximum number of research credits that apply to the degree

10.21 Participation in Commencement

Master of Science students who expect to complete all degree requirements by the end of the following summer term are eligible to participate in the spring Commencement ceremony and to have their names published in the Commencement book. MS students may only participate in graduation and be listed in the commencement booklet one time.

Ph.D students who are expected to complete all degree requirements, including the dissertation defense, by the end of summer term may participate in the spring term graduation ceremonies. Those not having completed the dissertation defense with at least a conditional pass on or before April 1 and not having completed all other degree requirements as of the end of the spring term must have their likely summer-term completion documented by April 1 in letters of request to the COS Dean from their dissertation Faculty Advisor and Center Director. The Dean will then make all final decisions regarding participation in commencement ceremonies. Ph.D students may only participate in graduation and be listed in the commencement booklet one time.

Ph.D. regalia must be ordered for candidates. Regalia will be available for pick up prior to Commencement.

For more information see this link: <https://www.rit.edu/commencement/faqs#cap-and-gown>

10.22 Registration/Enrolling in Courses

Students are responsible for enrolling each term through the Student Information System <https://sis.rit.edu>. Registration takes place during the preceding term (except fall registration, which begins during spring term). Students should enroll based on program requirements and their approved plan of study. Entering students have the opportunity to register by July or early August of the summer prior to their first year; an email will be sent to entering students with instructions for registration and course requirements. It is the responsibility of students to make appointments with their Faculty Advisor (or, for incoming students, the Graduate Program Coordinator) at the time of registration to discuss course selection, elective requests, and possible transfer credit requests.

10.23 Schedule Verification and Changes

It is the student's responsibility to enroll and to verify their schedule is correct. A student may change their schedule at any time up to the end of the university add/drop period, following the procedure outlined by the RIT Registrar. Students are strongly encouraged to consult with the Graduate Program Coordinator, Faculty Advisor or Academic Coordinator before adding or dropping classes. Changes in a course schedule through this process are not reflected on a student's grade report or permanent record.

10.24 Student Records

Student records are housed in the Dean's Office, the Chester F. Carlson Center for Imaging Science, and The Registrar's Office. Administrative support is available to students through these offices in areas of registration, course selection, scheduling, records, and program advising. Answers to questions are

often available on a walk-in basis. Students who wish a consultation should make an appointment with the Academic Coordinator or Graduate Program Coordinator.

In accordance with the Family Educational Rights and Privacy Act of 1974 (commonly known as the Buckley Amendment), RIT students have the right to inspect, review, and challenge the accuracy of official educational records. RIT policy ensures that only proper use is made of such records. With the exception of copies made for internal use (provided by the Registrar for advising purposes), copies of a student's permanent record (transcript) or non-public information from student records will not be released without the student's written consent. Official written requests from students must be made for transcript release.

Directory information may be released at any time to persons or agencies indicating a legitimate interest. *Directory information* includes the following: a student's name, mailing address and telephone number, date and place of birth, major field of study, participation records in official RIT activities and sports, dates of attendance at RIT, degrees and awards received.

10.25 Time Limitations: The "Seven-Year Rule"

For the doctoral degree, the initiation of the seven-year time period occurs when the student passes the qualifying exam. Normally, full-time students complete the course of study for the doctorate in approximately three to five years.

For the MS degree, successful completion of all course and research credits or project requirements is required within seven years of the term in which the first course applied to degree requirements was completed. If a student is pursuing an MS thesis, continuous enrollment during the research phase of the program is required.

In rare cases, extensions of the seven-year rule may be granted. Petition for an extension is made to the Dean of Graduate Studies, and is initiated via written request to the Graduate Program Coordinator. The process to petition for an extension is at this link: <https://www.rit.edu/policies/sectionD/D12.html>

10.26 Transfer Credit

Transfer credit may be awarded based on an approved plan of study. Official transcripts from an accredited university must be on file with the RIT Registrar. Course descriptions and syllabi may be requested by the Faculty Advisor or Graduate Program Coordinator before approval will be given for transfer credit. A grade of B or the equivalent must be earned for a course to be transferred. The grade of a transferred course does not apply to Program Cumulative GPA. A maximum of 6 credits may be transferred to the MS degree. A maximum of 30 credits may be transferred to the Ph.D. degree

11. Graduation Checklist

Students will complete the following checklist as they complete their degree.

- Complete an Application for Graduation Form found at this link: <https://www.rit.edu/registrar/faculty-staff/forms-non-restricted>
- Review of required/elected courses and research credits per approved plan of study
- Schedule Dissertation/Thesis defense
- Provide title of dissertation/thesis and names of committee and outside chair, if applicable to Graduate Program Coordinator
- Confirm all material returned to Wallace Library
- Confirm no outstanding balance with Student Financial Services
<https://www.rit.edu/sfs/information-students-0>
- After successful defense, follow instructions at this link: <https://infoguides.rit.edu/thesis-services>
- Provide Graduate Program Coordinator and/or Academic Coordinator contact and employment information
- Certification for the degree will occur at the end of the term in which all requirements are satisfied. (Certifications are not processed at the end of intersession.)
- Complete Survey of Earned Doctorates (Ph.D. student only)

12. Externally Sponsored Projects Disclosure Policy

RIT policy requires all RIT individuals (faculty, staff, and students) be informed with the pertinent details of externally sponsored research projects at RIT, including who is sponsoring the project. Graduate students who are financially supported by these projects have the right to know these pertinent details including:

- name of the Principal Investigator,
- title of the project,
- abstract of the project,
- name of the sponsor and original source of funds (if different),
- amount of the project funding,
- project duration, and
- existence of any classified information.

This information can be found on RAPID, <https://rapid.rit.edu/rapid/>.

This policy can be found at: <https://www.rit.edu/policies/c010>

13. RIT Non-Discrimination Statement

RIT does not discriminate. RIT promotes and values diversity within its workforce and provides equal opportunity to all qualified individuals regardless of race, color, creed, age, marital status, sex, gender, religion, sexual orientation, gender identity, gender expression, national origin, veteran status, or disability.

The Title IX Coordinator has overall responsibility for the university's institutional compliance with Title IX. Any person with a concern about the university's handling of a particular matter related to sex or gender-based discrimination or harassment should contact:

Stacy DeRooy
Director of Title IX and Clery Compliance
Title IX Coordinator
171 Lomb Memorial Drive
Rochester, NY 14623
585-475-7158
Stacy.DeRooy@rit.edu

www.rit.edu/titleix

Any person may report sex discrimination, including sexual harassment, in person, by mail, by telephone, or by electronic mail, using the contact information listed for the Title IX Coordinator, or by any other means that results in the Title IX Coordinator receiving the person's verbal or written report. Reports may be made regardless whether the person reporting is the alleged victim of any conduct that could constitute sex or gender-based discrimination or harassment. Reports may be made at any time (including during non-business hours) by calling the telephone number noted above, by electronic mail, by mail to the office address listed for the Title IX Coordinator, or by filing a [report on line](#) with RIT's Title IX Office.

The U.S. Department of Education, Office for Civil Rights (OCR) is a federal agency responsible for ensuring compliance with Title IX. OCR may be contacted at 400 Maryland Avenue, SW, Washington, DC 20202-1100, (800) 421-3481.

14. Relevant RIT Links

Counseling and Psychological Services <https://www.rit.edu/counseling/>

Enrollment, Records, Course Bulletins, Class Schedules, Calendars: <https://sis.rit.edu>

RIT Graduate Financial Aid/Scholarships: <https://www.rit.edu/admissions/financial-aid/graduate>

Information Technology Services: <https://www.rit.edu/its/>

International Student Services: <https://www.rit.edu/studentaffairs/iss/>

Office of Co-operative Education and Career Services: <https://www.rit.edu/emcs/oce/>

Office of Dean of Graduate Studies: <https://www.rit.edu/graduateschool/>

Office of the Registrar <https://www.rit.edu/registrar/>

Research Computing: <https://www.rit.edu/researchcomputing/>

RIT Service Center <https://help.rit.edu/sp>

Student Employment: <https://www.rit.edu/careerservices/student-employment-office>

RIT Thesis Binding: https://infoguides.rit.edu/ld.php?content_id=34957454

Wallace Library: <https://library.rit.edu/>

Appendix A. Chester F. Carlson Center for Imaging Science Shared Expectations for Ethics and Professional Integrity

The Chester F. Carlson Center for Imaging Science is dedicated to a challenging and collaborative educational experience in imaging science that is grounded in the integrity of the students, faculty, and staff. That integrity is expressed by our actions, individually, as well as by our actions collectively, including those in research; on laboratory, programming, and homework assignments; on examinations; and in our collaborations and interactions with one another. RIT has a policy on academic honesty, which is maintained at:

Discussion: <https://www.rit.edu/twc/academicintegrity/talking-about-academic-integrity> Policy: <https://www.rit.edu/academicaffairs/policiesmanual/d080>

Reasons: <https://www.rit.edu/twc/academicintegrity/reasons-students-plagiarize-or-cheat>

Student Code of Conduct: <https://www.rit.edu/academicaffairs/policiesmanual/d180>

The shared expectations described in this document build on, and are in addition to, the RIT policy. The purpose of this shared expectations document is to assure that we in CIS are taking an active and engaged approach to maintaining the highest possible levels of scientific and professional ethics and integrity and that the students, faculty, and staff of CIS have a common code of ethics and integrity and a common understanding of the consequences of violating that code.

Research: It is unethical to falsify any data in an experiment, or computational or theoretical results, whether the data or results are to be submitted to internal or external review (e.g., in a thesis or dissertation or for a conference or journal paper or a grant proposal). Similarly, data, results, text, code, and figures cannot be plagiarized. If any of the above items are demonstrated to have been falsified or plagiarized on a paper submission, the faculty, in consultation with the Director, has discretion to determine the penalty, up to and including expulsion from the program. If data, results, text, code or figures have been falsified on a paper submission, the paper shall be withdrawn and the faculty, in consultation with the Director, shall have discretion to determine the penalty.

Examinations: Students must not plagiarize the work of others nor allow others to plagiarize their work on written examinations. The faculty will try to arrange the room in such a manner to remove or discourage such temptation. Faculty may require students to attest to their conduct on any submitted material by signing a statement such as, *"I have neither given nor received unauthorized assistance on this examination."* The faculty member has discretion to determine the penalty for violations of this policy.

Homework: The faculty member has the obligation to specify the conditions to be fulfilled on homework submissions (e.g., can be done collaboratively, must be done alone, etc.). As a rule, students may not submit the work of others as their own, including AI-generated text. In many, if not most, homework scenarios, collaborative effort on homework is part of the learning process and is therefore useful, but students may be asked to reference any assistance that they have received. Similarly, group planning and/or checking of final answers may be permissible, but both are examples of collaborative efforts that must be attributed if required by the professor. Faculty may require students to attest to their conduct on any submitted material (e.g., laboratory reports, computer programs, term papers) by signing a statement such as, *"I have followed all guidelines and requirements and have attributed all assistance received."*

Collaboration: Collaboration among students is often encouraged as an integral part of the learning experience, be it in the classroom or for research. Some examples include group projects, laboratory assignments, and test

preparation. Whenever submitted work is the result of such collaboration, clearly crediting all who contributed will eliminate the possibility that the collaboration is in violation of *RIT's Academic Integrity Policy*, which states, "Plagiarism is the representation of others' ideas as one's own without giving proper attribution to the original author or authors."

Incoming students will discuss with faculty and each other this Shared Expectations *for Ethics and Professional Integrity*, and the RIT Academic Honesty Policy and after having an opportunity to ask questions, will sign a copy of the Expectations indicating that that they have read and discussed it and are aware of the consequences of policy violations. In some cases, the penalties for violation of the policy are stipulated; in others they are not rigidly defined, giving the faculty discretion in specifying the consequences. Those consequences may include failure in a course, suspension of funding for a term or longer, or expulsion from the program in severe cases such as falsifying research data, plagiarism, or multiple violations. In all cases, academic honesty violations will be reported to the CIS Director, so that the Director can maintain an overview of instances of academic dishonesty occurring with the Center for Imaging Science and so that the Director can assure that penalties are applied consistently and fairly.

I have read RIT's Academic Integrity Policy and the Chester F. Carlson Center for Imaging Science *Shared Expectations on Ethics and Professional Integrity* (see *College-Specific Resources: myrit.edu*). I understand the importance of honesty and integrity in science and education and I understand that the consequences of violating this policy may include failing a course, loss of funding, and/or expulsion from the program.

Name (print)

Signature

Date

Updated February 11, 2019