

Request for Graduate Addition, Deletion, or Change of Area of Emphasis-Page 1

- 1.Prepare one paper copy with all signatures and supporting material and forward to the Graduate Council Chair.
- 2.E-mail one PDF copy without signatures to the Graduate Council Chair. If attachments included, please merge into a single file.
- 3.**The Graduate Council cannot process this application until it has received both the PDF copy and the signed hard copy.**

College: Medicine

Dept/Division: Clinical and Translational Science

Contact Person: Todd Green

Phone: 304-696-3531

Action Requested

Check action requested: Addition Deletion Change

Degree Program Clinical and Translational Science Gm70

Area of Emphasis Clinical Informatics Gm71

Effective Term/Year Fall 20 Spring 20 Summer 20

Notifications

Attach a copy of written notification regarding this curriculum request to the following:

- 1. Statement of Non-Duplication: If this area of emphasis will be similar in title or content to an existing area of emphasis, please send a memo to the affected department/division and include a copy with this packet as well as the response received from the affected department.
- 2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimate of cost and time required to secure these items.

Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.

Dept. Chair/Division Head _____	Date <u>2/27/19</u>
Registrar <u>Sonpaya</u>	Date <u>2-27-19</u>
College Curriculum Chair <u>Todd L. Green</u>	Date <u>2/27/19</u>
College Dean _____	Date <u>2/27/19</u>
Graduate Council Chair _____	Date _____
Provost/VP Academic Affairs _____	Date _____
President _____	Date _____

Request for Graduate Addition, Deletion, or Change of Area of Emphasis-Page 2

1. Please provide a rationale for addition, deletion, change:

Currently there are no areas of emphasis in the Clinical and Translational Science MS program. The field of clinical and translational science has become more specialized since the program started, and we need to respond to student needs by adding new areas of emphasis. This area of emphasis will train students to work with electronic health records and medical databases to better understand the causes of disease and improve the quality of health care in the region.

2. Please describe any changes in curriculum:

Course number, title, credit hours. Note whether each course is required or optional. Enter NONE if no change.

Attached

3. **Additional Resource Requirements:** If your program requires additional faculty, equipment or specialized materials to ADD or CHANGE this Area of Emphasis attach an estimate of the time and money required to secure these items. May attach separate page if needed

NOTE: approval of this form does not imply approval for additional resources. Enter NOT APPLICABLE if not applicable.

4. **NON-DUPLICATION:**

If a question of possible duplication occurs, attach a copy of the correspondence sent to the appropriate department(s) describing the request and any response received from them.

Enter NONE if not applicable.

For catalog changes as a result of the above action, please fill in the following pages.

Request for Graduate Addition, Deletion, or Change of Area of Emphasis-Page 3

5. **Current Catalog Description**

Insert the *Current* Catalog Description and page number from the latest catalog for entries you would like to change.
(May attach separate page if needed)

6. **Edits to the Current Description**

Attach a PDF copy of the current catalog description prepared in MS Word with strikethroughs to mark proposed deletions and use the highlight function to indicate proposed new text.

7. **New Catalog Description**

Insert a 'clean' copy of your proposed description, i.e., no strikethroughs or highlighting included. This should be what you are proposing for the new description. (May attach separate page if needed)

Request for Graduate Addition, Deletion, or Change of Area of Emphasis-Page 4

Please insert in the text box below your Area of Emphasis change information for the Graduate Council agenda. Please enter the information exactly in this way (including headings):

Department:

Area of Emphasis Title:

Credit Hours:

Type of Change Requested: *(addition, deletion, change)*

Term to Take Effect: *(Fall, Spring, Summer/Year)*

Rationale:

Department: Clinical and Translational Science

Area of Emphasis Title: Clinical Informatics

Credit Hours: 45

Type of Change Requested: Addition

Term to Take Effect: Fall 2019

Rationale: Currently there are no areas of emphasis in the Clinical and Translational Science MS program. The field of clinical and translational science has become more specialized since the program started, and we need to respond to student needs by adding new areas of emphasis. This area of emphasis will train students to work with electronic health records and medical databases to better understand the causes of disease and improve the quality of health care in the region.

MS IN CLINICAL AND TRANSLATIONAL SCIENCE
CLINICAL INFORMATICS AREA OF EMPHASIS CURRICULUM
(All courses are required.)

Fall Semester 1

BMR 660	Communication Skills I	1 CR
BMR 680	Seminar	1 CR
CTS 600	Epidemiology and Biostatistics Used in Medical Research	3 CR
CTS 620	Basic Clinical Research Operations	3 CR
CTS 635	Writing and Peer Review of Scientific Publications	1 CR
CTS 640	Clinical Trials Journal Club	1 CR
		<i>10 CR</i>

Spring Semester 1

BMR 661	Communication Skills II	1 CR
BMR 680	Seminar	1 CR
CTS 610	Study Design and Applied Statistics in Medical Research	3 CR
CTS 614	Online Survey Tools, Relational and Data Warehousing, and Data Manipulation	3 CR
CTS 640	Clinical Trials Journal Club	1 CR
		<i>9 CR</i>

Summer Semester

CTS 650	Rural Clinic Experience	5 CR
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Fall Semester 2

CTS 611	Machine Learning Journal Club	1 CR
CTS 612	Introduction to Clinical Machine Learning	3 CR
CTS 615	Introduction to Clinical Databases	3 CR
CTS 616	Introduction to Clinical Programming Using C#	3 CR
		<i>10 CR</i>

Spring Semester 2

CTS 611	Machine Learning Journal Club	1 CR
CTS 628	Introduction to Java Clinical Programming	4 CR
CTS 637	Introduction to Tableau	3 CR
CTS 645	Navigating Health IT Systems for Quality Data	3 CR
		<i>11 CR</i>

TOTAL HOURS

45

CURRENT CATALOG DESCRIPTION

Page 224

CLINICAL AND TRANSLATIONAL SCIENCE, M.S.

Program Description

The Clinical and Translational Science (CTS) Department in the Marshall University Joan C. Edwards School of Medicine offers a Master of Science (M.S.) degree in Clinical and Translational Science. The goal of this program is to equip physicians in-training and other biomedical scientists with the information and training they need to translate basic clinical advances into improved patient care that will enhance the quality of life for patients in the Appalachian region, particularly southern West Virginia.

Students will receive education in clinical trial design, epidemiology, statistics, informatics, and translational research. Graduates of this program will be able to lead clinical trials of new drugs and procedures in West Virginia, particularly in its rural regions. CTS graduates also will be strong applicants for positions in schools of medicine and medical centers that have clinical and translational science centers.

Pages 225-226

Degree Requirements

All students are required to meet the general requirements of the Graduate College for receipt of a master's degree. A minimum of 36 credit hours is required for a non-thesis degree. In addition, all students must pass a written and/or oral comprehensive exam.

All students will take the following courses.

Year I Fall

- BMR 660 Communication Skills I
- BMR 680 Seminar
- CTS 600 Epidemiology and Biostatistics Used in Medical Research
- CTS 620 Basic Clinical Research Operations
- CTS 635 Writing and Peer Review of Scientific Publications
- CTS 640 Clinical Trials Journal Club

Year I Spring

- BMR 661 Communication Skills II
- BMR 680 Seminar
- CTS 610 Study Design and Applied Statistics in Medical Research
- CTS 614 Online Survey Tools, Relational and Data Warehousing, and Data Manipulation
- CTS 630 Fundamentals of Team Science
- CTS 640 Clinical Trials Journal Club

Summer Semester

- CTS 650 Rural Clinic Experience

Year II Fall

BMR 680 Seminar

CTS 625 Clinical Research Operations Lab

CTS 640 Clinical Trials Journal Club

CTS 660 Molecular Phenotype of Appalachian Disorders

Year II Spring

BMR 680 Seminar

CTS 625 Clinical Research Operations

CTS 640 Clinical Trials Journal Club

EDITS TO CURRENT CATALOG DESCRIPTION

Page 224

CLINICAL AND TRANSLATIONAL SCIENCE, M.S.

Areas of Emphasis

Clinical Informatics

Clinical Research

Clinical Trials

Program Description

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Students will receive education in clinical trial design, epidemiology, statistics, informatics, and translational research. Graduates of this program **in the Clinical Trials area of emphasis** will be able to lead clinical trials of new drugs and procedures in West Virginia, particularly in its rural regions. **CTS graduates** They also will be strong applicants for positions in **schools of medicine and medical centers that have clinical and translational science centers.** **Clinical Research graduates can apply to doctoral programs in medicine or other health-related fields having a superior background in basic science, epidemiology, informatics, and statistics.** **Clinical Informatics graduates will have a background in bioinformatics, computer programming, and clinical trials design, thus making them strong candidates for positions in schools of medicine, medical centers, and the health care industry.**

Pages 225-226

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~~BMR 680 Seminar~~

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~~CTS 620 Basic Clinical Research Operations~~

~~CTS 635 Writing and Peer Review of Scientific Publications~~

~~CTS 640 Clinical Trials Journal Club~~

Year I Spring

~~BMR 661 Communication Skills II~~

~~BMR 680 Seminar~~

~~CTS 610 Study Design and Applied Statistics in Medical Research~~

~~CTS 614 Online Survey Tools, Relational and Data Warehousing, and Data Manipulation~~

~~CTS 630 Fundamentals of Team Science~~

~~CTS 640 Clinical Trials Journal Club~~

Summer Semester

~~CTS 650 Rural Clinic Experience~~

Year II Fall

~~BMR 680 Seminar~~

~~CTS 625 Clinical Research Operations Lab~~

~~CTS 640 Clinical Trials Journal Club~~

~~CTS 660 Molecular Phenotype of Appalachian Disorders~~

Year II Spring

~~BMR 680 Seminar~~

~~CTS 625 Clinical Research Operations~~

~~CTS 640 Clinical Trials Journal Club~~

Clinical and Translational Science, M.S. (Clinical Informatics Area of Emphasis)

All students are required to successfully complete the following curriculum.

Year 1 Fall

BMR 660 Communication Skills I

BMR 680 Seminar

CTS 600 Epidemiology and Biostatistics Used in Medical Research

CTS 620 Basic Clinical Research Operations

CTS 635 Writing and Peer Review of Scientific Publications

CTS 640 Clinical Trials Journal Club

Year 1 Spring

BMR 661 Communication Skills II

BMR 680 Seminar

CTS 610 Study Design and Applied Statistics in Medical Research

CTS 614 Online Survey Tools, Relational and Data Warehousing, and Data Manipulation

CTS 630 Fundamentals of Team Science

CTS 640 Clinical Trials Journal Club

Summer Semester

CTS 650 Rural Clinic Experience

Year 2 Fall

CTS 611 Machine Learning Journal Club
CTS 612 Introduction to Clinical Machine Learning
CTS 615 Introduction to Clinical Databases
CTS 616 Introduction to Clinical Programming Using C#

Year 2 Spring

CTS 611 Machine Learning Journal Club
CTS 628 Introduction to Java Clinical Programming
CTS 637 Introduction to Tableau
CTS 645 Navigating Health IT Systems for Quality Data

Clinical and Translational Science, M.S. (Clinical Research Area of Emphasis)

All students are required to successfully complete the following curriculum.

Year 1 Fall

BMR 601 Introduction to Nucleic Acids and Proteins
BMR 602 Introduction to Cell Structure and Metabolism
BMR 680 Seminar
CTS 600 Epidemiology and Biostatistics Used in
Medical Research
CTS 635 Writing and Peer Review of Scientific
Publications
CTS 640 Clinical Trials Journal Club

Year 1 Spring

BMR 603 Regulation of Cell Function
BMR 604 Cellular Basis of Disease
BMR 680 Seminar
CTS 614 Online Survey Tools, Relational and Data
Warehousing, and Data Manipulation
CTS 640 Clinical Trials Journal Club
PHS 667 Experimental Approaches to Physiology

Summer Semester

BMR 785 Introduction to Research

Year 2 Fall

BMR 680 Seminar
CTS 640 Clinical Trials Journal Club
CTS 660 Molecular Phenotype of Appalachian Disorders
PMC 621 Pharmacology I

Year 2 Spring

BMR 680	Seminar
CTS 610	Study Design and Applied Statistics in Medical Research
CTS 640	Clinical Trials Journal Club
PMC 622	Pharmacology II

Clinical and Translational Science, M.S. (Clinical Trials Area of Emphasis)

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Year I Fall

- BMR 660 Communication Skills I
- BMR 680 Seminar
- CTS 600 Epidemiology and Biostatistics Used in Medical Research
- CTS 620 Basic Clinical Research Operations
- CTS 635 Writing and Peer Review of Scientific Publications
- CTS 640 Clinical Trials Journal Club

Year I Spring

- BMR 661 Communication Skills II
- BMR 680 Seminar
- CTS 610 Study Design and Applied Statistics in Medical Research
- CTS 614 Online Survey Tools, Relational and Data Warehousing, and Data Manipulation
- CTS 630 Fundamentals of Team Science
- CTS 640 Clinical Trials Journal Club

Summer Semester

- CTS 650 Rural Clinic Experience

Year II Fall

- BMR 680 Seminar
- CTS 625 Clinical Research Operations Lab
- CTS 640 Clinical Trials Journal Club
- CTS 660 Molecular Phenotype of Appalachian Disorders

Year II Spring

- BMR 680 Seminar
- CTS 625 Clinical Research Operations
- CTS 640 Clinical Trials Journal Club

NEW CATALOG DESCRIPTION

Page 224

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CTS 635 Writing and Peer Review of Scientific Publications

CTS 640 Clinical Trials Journal Club

Year 1 Spring

BMR 661 Communication Skills II

BMR 680 Seminar

CTS 610 Study Design and Applied Statistics in Medical Research

CTS 614 Online Survey Tools, Relational and Data Warehousing, and Data Manipulation

CTS 630 Fundamentals of Team Science

CTS 640 Clinical Trials Journal Club

Summer Semester

CTS 650 Rural Clinic Experience

Year 2 Fall

CTS 611 Machine Learning Journal Club

CTS 612 Introduction to Clinical Machine Learning

CTS 615 Introduction to Clinical Databases

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Year 2 Spring

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CTS 640 Clinical Trials Journal Club

Year 1 Spring

BMR 603 Regulation of Cell Function

BMR 604 Cellular Basis of Disease

BMR 680 Seminar

CTS 614	Online Survey Tools, Relational and Data Warehousing, and Data Manipulation
CTS 640	Clinical Trials Journal Club
PHS 667	Experimental Approaches to Physiology

Summer Semester

BMR 785	Introduction to Research
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Year 2 Fall

BMR 680	Seminar
CTS 640	Clinical Trials Journal Club
CTS 660	Molecular Phenotype of Appalachian Disorders
PMC 621	Pharmacology I

Year 2 Spring

BMR 680	Seminar
CTS 610	Study Design and Applied Statistics in Medical Research
CTS 640	Clinical Trials Journal Club
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Summer Semester

CTS 650 Rural Clinic Experience

Year II Fall

BMR 680 Seminar

CTS 625 Clinical Research Operations Lab

CTS 640 Clinical Trials Journal Club

CTS 660 Molecular Phenotype of Appalachian Disorders

Year II Spring

BMR 680 Seminar

CTS 625 Clinical Research Operations

CTS 640 Clinical Trials Journal Club