A new program in Translational and Health System Science will launch in Fall 2020

**MS Program Mission**
To provide translational scientists with the methodological and professional skills to implement rigorous research in health care systems and in populations and to disseminate the findings to improve human health.

**Needs Assessment**
- The Graduate School of Arts and Sciences at Wake Forest University currently administers a Master of Science (MS) program in Clinical and Population Translational Science (CPTS), which trains clinician scientists to conduct translational research.
- There is demand not only for translational research, but research to continuously improve healthcare delivery and promote a learning health system (LHS).
- The Clinical and Translational Sciences Institute (CTSI) recently received a TL1 award to establish the LHS Scholars program, which necessitated the development of formal training in LHS science (LHSS).
- Due to overlap in student populations and complementary missions of CPTS and the LHS TL1, a MS program in Translational and Health System Science (THSS) with two tracks, Clinical and Translational Investigation (CTI) and LHSS, was developed, adding 8 courses to the curriculum.

**MS Program Development Process**
- Key Stakeholders included: TL1 Program Director and Core Faculty, Public Health Sciences Education Committee, CPTS Course Directors, CTSI Education and Evaluation Staff, and Graduate School Administration
- Stakeholders provided input on the development of the Program Competencies and provided feedback on the development of the new LHSS courses at a retreat held in August 2019.
- Course objectives were developed using a Competency Matrix to indicate introduction, reinforcement, assessment, and mastery of program competencies

### MS Program Competencies

**Shared Competencies**
- Develop meaningful and feasible research questions based on literature review, conceptual frameworks, and relevant stakeholders.
- Critically review and appraise the scientific literature, including evaluation of rigor and reproducibility, and methodological quality.
- Design and execute studies to answer research questions, applying appropriate study design, sampling, informatics, measurement, while minimizing threats to validity.
- Perform and interpret statistical analyses based on a foundation of basic statistical literacy, with graduates able to perform basic analyses on their own and prepared to collaborate with statisticians for more complex analyses.
- Ensure that research or quality improvement in healthcare settings adhere to the highest ethical and regulatory standards.
- Communicate scientific concepts orally and in writing, including through grant applications, protocols, manuscripts, abstracts, and presentations to scientific audiences and to lay audiences.
- Collaborate productively in multidisciplinary scientific teams comprised of basic, clinical, population scientists, and relevant stakeholders.
- Implement innovations in community or clinical health care settings to ensure the systematic uptake of research findings in a health system or population.

**CTI Competencies**
- Understand how health systems are financed and operate.
- Apply systems theory to research and implementation.
- Conduct research in real-world systems using appropriate study designs and analytic methods to assess outcomes of interest to health system stakeholders.
- Effectively lead and manage multidisciplinary scientific teams comprised of basic, clinical, population scientists, and relevant stakeholders.
- Perform and interpret simple and multiple linear and logistic regression models, and understand the complexities of repeated measures data analysis.
- Design and implement clinical trials

**LHSS Competencies**
- Understand how health systems are financed and operate.
- Apply systems theory to research and implementation.
- Conduct research in real-world systems using appropriate study designs and analytic methods to assess outcomes of interest to health system stakeholders.
- Effectively lead and manage multidisciplinary scientific teams comprised of basic, clinical, population scientists, and relevant stakeholders.
- Perform and interpret simple and multiple linear and logistic regression models, and understand the complexities of repeated measures data analysis.
- Design and implement clinical trials

**Program Courses by Track**

<table>
<thead>
<tr>
<th>Course</th>
<th>CTI</th>
<th>LHSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethics &amp; Responsibility 1 &amp; 2</td>
<td>1 x 2</td>
<td>C</td>
</tr>
<tr>
<td>Introduction to Biostatistics</td>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td>Translational Research Methods I</td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>Translational Research Methods II</td>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td><em>Introduction to Biomedical Informatics for the LHS (capstone)</em></td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td><em>Principles of Implementation Science</em></td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td><strong>Scientific Writing for Papers and Proposals (capstone)</strong></td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td><em>Research Paper (capstone)</em></td>
<td>1</td>
<td>C^</td>
</tr>
<tr>
<td><em>Research Paper (capstone)</em></td>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td><em>Research Grant Preparation (capstone)</em></td>
<td>3</td>
<td>E</td>
</tr>
<tr>
<td>Clinical Trial Methods</td>
<td>3</td>
<td>E</td>
</tr>
<tr>
<td>Statistical Modeling</td>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td><em>Building Successful Teams</em></td>
<td>0.5</td>
<td>E</td>
</tr>
<tr>
<td><em>Leading Successful Teams</em></td>
<td>0.5</td>
<td>E</td>
</tr>
<tr>
<td><em>Learning Health system colloquium</em></td>
<td>0.5 x 4</td>
<td>E</td>
</tr>
<tr>
<td><em>Organizational Change in Health Systems</em></td>
<td>2</td>
<td>E</td>
</tr>
<tr>
<td>LHS Team Science Practicum</td>
<td>1 x 2</td>
<td>E</td>
</tr>
<tr>
<td>Global Health Seminar</td>
<td>1</td>
<td>E</td>
</tr>
<tr>
<td>Antimicrobial Stewardship</td>
<td>3</td>
<td>E</td>
</tr>
<tr>
<td>Infection Prevention and Health System Epidemiology</td>
<td>3</td>
<td>E</td>
</tr>
</tbody>
</table>

(C) Core (required); (E) Elective; (CC) Core choice [1] take either Research Paper (3) or Training Grant Application (3)

**Evaluation and Assessment**
- Program directors will evaluate each course yearly and recommend improvements.
- Adherence to program mission will be maintained by support of faculty development, meetings with students, training program faculty, and review of syllabi, and periodic self-study at the request of the Graduate School.
- The LHS TL1 program evaluation will also include a review of the THSS program.

**Conclusions**
- A comprehensive curriculum was developed utilizing a rigorous systematic approach with stakeholder involvement.
- We will strive to be a "learning curriculum," using the process of a learning system to improve our curriculum, policies, and procedures.