North Carolina Agricultural and Technical State University

**Taskforce on University Research Rank:
Potential for Transitioning to R1**

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CHARGE TO THE TASKFORCE

North Carolina Agricultural and Technical State University ranks third in the State for research awards. The research awards at the university continue to grow annually. Given this achievement, the university should decide whether to remain at Carnegie R2 status (high research activity) or push to attain R1 distinction (very high research activity). To ensure that we are strategic in advancing the institutions' research agenda, we must thoroughly consider all factors for assessing North Carolina A&T's readiness for sustained research growth.

The taskforce is charged to:

- Review the metrics used for the Carnegie classification research activity index.

- Present a strategy to determine how N.C. A&T will position itself for R1 status, or whether it is better to set our sights on being one of the top R2 institutions.

- Identify strategies to strengthen the environment in which research will continue to thrive and grow at N.C. A&T.

- Strategically align the research strength of the institution with national and global trends.

- Assess opportunities for establishing new doctoral programs that will meet the university's research goals and have significant societal impact.

- Recommend strategies for increasing graduate student enrollment and graduate student success.

- Assess the infrastructure required to strengthen research and innovation in support of research excellence.

Introduction - Carnegie classifications

In 1970, the Carnegie Commission on Higher Education developed the "Carnegie Classification and Ranking" of universities methodology to classify colleges and universities to support its program of research and policy analysis. In its most recent 2018 classifications, Carnegie grouped doctoral institutions that awarded at least 20 research/scholarship doctoral degrees and had at least $5 million in total research expenditures into either R1 (very high research activity) or R2 (high research activity) institutions. A total of 261 R1 and R2 institutions exist in this latest ranking.

While the methodology is not openly published, multiple approaches have been taken to deconstruct the formula.[1] The deconstruction work reveals that institutions are classified based on 10 metrics that fall into two indices (aggregate or AI, and per-capita or PI). The following table summarizes the 10 metrics and approximate weightings of the metrics.

Aggregate Index	
Doctorates: STEM	0.909
S&E R&D Expenditures	0.899
Research Staff	0.894
Doctorates: Social Sciences	0.864
Doctorates: Humanities	0.839
Non-S&E R&D Expenditures	0.817
Doctorates: Other Fields	0.621

Per-capita Index	
Per-capita S&E R&D Expenditures	0.935
Per-capita Research Staff	0.930
Per-capita Non-S&E R&D Expenditures	0.619

It appears, based on formula reconstruction, that Carnegie performs their classification in four steps:
1. Rank the institutions on each metric, and use their rank as the score, where higher rank means high score. For example, because Harvard has the highest number of research staff, its score on this metric is 261/261.
2. Then, multiply each score by the relevant weight and sum the values together to calculate the two indexes: aggregate index (AI) and per-capita index (PI).
3. Calculate the Euclidian distance from each institution's indices to the minimum indices among all institutions: Distance = SQRT ((AI–min(AI)) ^{2} + (PI – min(PI))^2)
4. The last step is to rank institutions based on that distance. A larger distance translates to a better rank. Institutions ranked at 130 or above are considered R1.

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[1] For example, see: https://www.tandfonline.com/doi/full/10.1080/2330443X.2018.1442271?af=R&

RECOMMENDATIONS FROM THE TASKFORE - AND TIMELINES

The Taskforce advocates that NC A&T State University develops a comprehensive plan and strategy to increase industrial, private, state and federal investments in our institution to support various aspects of the R2 to R1 initiative
(including obtaining new funding support for doctoral education, new faculty lines, support for research staff, and research infrastructure).

The following study was conducted by the Taskforce members and their recommendations are provided below:

I. <u>**Vision: Believing the Why!**</u>

It is necessary to engage all aspects of the University in attaining R1 status. This begins with deliberate focus on communicating a University vision to align stakeholders on why striving for R1 status is important for North Carolina A&T. Currently, no institutions designated as historically black colleges or universities (HBCUs) are ranked as a top tier research institution by the Carnegie Foundation.

> *Recommended Vision for Research at NC A&T*
> *North Carolina Agricultural and Technical State University will join the top 4.5% universities in the United States and be recognized as a R1 institution by the Carnegie Foundation and the top research institution amongst historically black colleges and universities.*

If NC A&T is to increase its ranking in research it will:

1. Create a healthy research enterprise ecosystem to support research and innovation by faculty and students at N.C. A&T and increase government and industry grants and contracts and expenditures.

2. Provide the best educational experience for students at all levels by exposing and engaging them in cutting-edge research. This will attract students from around the world and produce a highly talented workforce flow from the University.

3. N.C. A&T will become the destination for producing (black) PhDs in the United States. To do so, we must be the best at research productivity and the quality of graduate student experiences.

4. Further increase the University's success as an economic driver for the State of North Carolina and for the Piedmont Triad region. Because of the quality and productivity of its research, A&T will attract industry partnerships to the region.

5. Influence and improve the infrastructure for human health and inequities (health disparities) and overall quality of life for all communities.

Accountability

The above vision and justification need to be communicated

By:
- Cabinet members
- Board of Trustees
- Deans
- Chairs

To:
- Faculty
- Students
- Donors
- Other University Stakeholders

Timeline: Beginning on August 15, 2021. To fulfill this vision will take a minimum of 6 years.

II. <u>Infrastructure</u>:

RECOMMENDATIONS

To meet the goal of increasing the research ranking of the university, it is necessary to review the funding model, such that budget planning is connected to academic planning. There will need to be various sources of revenue dedicated to this initiative and the funding from the State to the University will need to be increased. The taskforce recognized that there are inequities in investment at HBCUs which have impacted graduate education, renovation of facilities, and faculty hiring and retention. If no new resources are available and the overall productivity increases as it has for the past decade, the human capital will continue to be strained to a breaking point. If new funds are made available, they will need to be prioritized such that investments are made in the areas of (i) doctoral degree support; (ii) start-up funds to attract top faculty, (iii) salary compensation to attract and retain the strongest faculty, and (iv) equipment and travel support. It is important that we view the investment in doctoral support as a strategy that will increase faculty productivity in research, and consequently, that of the university. It will also help in management of faculty workload if some of the doctoral students can be assigned to help in instruction.

A. Infrastructural Planning
Academic Affairs – Business & Finance – DORED – Human Resources – Advancement – Chancellor's Cabinet

The above constituents will need to work diligently on addressing critical challenges interfering with the University's forward and steady progression to strengthen the University's research goals. If not addressed, the consequence will be negative impact on an already strained ecosystem.

The critical challenges include:
- Access to competitive start-up funds
- Access and maintenance of research laboratory space
- Shift from funding DORED personnel with facilities and administrative (F&A) recovery to State funds
- Increasing administrative efficiency while decreasing faculty administrative burden.
- Adding highly qualified staff members to support faculty in research administration related work at the college level.

- o Faculty workload policies to enable faculty to train doctoral students and accelerate research
- o Policy and procedure improvements to allow departments to easily provide faculty with course buy-out/release time to focus on research and doctoral student training.
- o Process improvements to enable faculty to leverage the re-assignment of duties benefit for enhancing their research skills so they can bring new and updated expertise to the University.
- o Enhancing the quality of the website so that it showcases the research expertise of each faculty member, as well as that of the university.

Infrastructure Details:

North Carolina A&T State University must:

- Have dedicated funds that are allocated for each college annually for attracting new faculty members who bring state-of-the-art research expertise to address emerging areas of national research need. The funding must be competitive for attracting faculty commensurate with that of
  R2 universities with the goal of improving this over 5 years to enable start up packages to match R1 institutions (This requires a funding source beyond Title III funds).
- Offer competitive start-up packages and consider offering tenure to outstanding candidates
- Offer competitive salaries to faculty and research staff (postdoctoral fellows).
- Increase the number of faculty lines across departments to cover both instructional needs and research needs. (Currently we do not have enough faculty to cover the instructional needs of our instructional model. This results in increased workloads, reduced capacity for research, and reduced capacity for graduate student training.)
- Apply a budget model that reflects the productivity of the College and its departments. A serious discussion related to budget and productivity needs to be established. Accountability needs to be between Academic Affairs and the Office of Business and Finance.
- Return a percentage of operating funds to units to reward performance aligned with stated University goals. Currently operating budgets are flat across the Colleges and departments or decrease. Even when enrollment in a College or department go up, the budget sometimes decreases. This negatively affects the morale of the leadership and the faculty.
- Dedicate funds toward doctoral education (including TA lines) and distribute those funds directly to the academic colleges, the graduate college, or a fellowship office.
- Apply best practices for running R1 institutions and the frameworks necessary to support them. This includes the University's funding model, where it is suggested that NC A&T develops a hybrid model that accounts for university operational needs and simultaneously shifts the responsibility of a fraction of the resources to revenue generating units for internal management. The funding associated with the latter needs to be data driven.
- Hire the most competitive faculty members, while ensuring that faculty search committees are sensitive to the impact of faculty demographics on attracting diverse graduate students.
- Implement a new and efficient hiring sequence for research staff, including post-docs
- Implement a new and efficient hiring sequence for faculty.

(i) **Start-up Funds for New Hires**
   Current situation:
   Start-up funding for new hires is needed and critical toward hiring faculty of the future. Currently, start-up funding is largely managed by the Academic Dean working in collaboration with the relevant department chair and the Provost's office. The expectation is that the Dean takes the lead in managing start up packages using resources he/she manages (state funds, returned overhead, etc.), and when needed, the Dean has the option to work with the Provost to request assistance. The taskforce discussed the type of start-up packages being offered at a peer institution, the University of North Carolina at Greensboro, where for a faculty member hired in a STEM discipline, the average start-up is approximately $450,000 over a 3-year time frame.

   The contributions to faculty start up packages by the Provost office is managed on a first come, first serve basis, and those funds run out quickly. As such it is in the best interests of the academic Colleges to ensure that faculty searches reach the offer stage of the hiring process as early in the academic year as possible. The Provost traditionally leverages funds such as Title III and other sources for the contributions she makes to start up packages and it is a limited pool of funding.

   Start-up funds dedicated to reliably paying the stipends and tuitions of graduate students is currently challenging at North Carolina A&T. Different Colleges manage it in different ways, yet the result is the commitment for graduate student support within start up packages that are generally the responsibility of the department chairs and Deans.

   Start-up funds associated with relocation expenses can only be paid from Foundation funds. As such, relocation expenses for faculty start-up packages are not paid by the Provost's office at all. In some cases, this responsibility also falls on the department chairs for faculty and staff they are hiring.

   Required changes:
   Establish a central source for faculty start-up funding with base levels of funding reflective of faculty rank and field, that can be augmented by department and college level funding.

   Timeline: 2021-2022
   Accountability: Academic Affairs – Business & Finance – DORED – Human Resources – Advancement

(ii) **Laboratory Space**
   Current Situation: The Space Allocation policy will need to be updated as it does not reflect current practices.[2] The Space Allocation policy should be updated to reflect current practices at A&T, and as relevant to the research enterprise, take into account the lifecycle of a laboratory (see Figure 1).

   Required Changes: A space audit will need to take place beginning in July 2021. These audits have different phases, and it is important to understand that this will be time-consuming and will

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[2] https://hub.ncat.edu/administration/legal/policies/sec5-res-econ-dev/Allocation%20of%20Research%20Space.pdf.

likely cause significant concern from various departments. However, in order for the university to maximize usage of space, we must:

    (i)   Phase I: Examine what space is available, how is it currently being utilized, its current utilization state, i.e. over or under-utilized.

    (ii)   Phase II: A lab space audit in relation to research (i.e. funded research or not) will need to take place. This will also need to be coupled with the number of graduate students being trained in that space.

    (iii)   Phase III. Space management using the data/information derived from work carried out in Phase I and Phase II.

There are a few buildings on campus that will need to undergo renovation. An example is Hines Hall. The audit will help in determining what is the accurate cost for its renovation with accurate details for each space in the building. This will help prioritize what is needed, when it will need to occur, and what resources are required. Such a process will need to be adopted for other spaces on campus.

Timeline: 2021-2024

Accountability: The lifecycle of a research laboratory involves multiple University units. A unit, ideally the University Space Committee, needs to serve as the coordinating body so that infrastructure is appropriately assigned, monitored, managed, maintained and reassigned. It is required that this unit will work collaboratively with all space stakeholders. In terms of research laboratory space, the current policy delegates authority from DORED to the Space Committee in the opening paragraph of the policy. The University Space Committee should have the responsibility of maintaining an inventory of research space, the functionality of research facilities, the quality of its condition, and the authority to allocate and re-allocate that inventory within known guidelines according to University priorities. Those guidelines must take into account the logical metrics of scholarly productivity. The University Space Committee must ensure that University Facilities has in place a plan for monitoring the condition of research laboratory space and responding to maintenance needs to keep space from falling into a delayed maintenance state. The Office of the Vice Chancellor for the Division of Research and Economic Development has a representative on the Space Committee and as the main research officer on campus has responsibility of collaborating with Deans in coordinating the activities of those involved in other activities associated with the lifecycle of a research laboratory.

(iii) Shift from the utilization of F&A to fund DORED personnel

Current Situation: DORED staff are funded using an F&A return model, where only the VC for DORED is funded on State funds. This reduces the funds available for reinvesting in the University's research enterprise, especially in the faculty, departments, and colleges generating the F&A. The University's utilization of F&A funds for DORED's staff salaries also prevents faculty, departments, and Colleges from accurately calculating the F&A funds that will be returned to them annually, thus removing their ability to leverage those funds most effectively for further growing the research enterprise. It is also important to note that a positive step was implemented by the Division of Business and Finance and DORED in the last few years, when it removed the previous University practice of having returned F&A funds expire at the end of each fiscal year.

Required Changes: As a result of the faculty climate survey results collected by ADVANCE during the 2018-2019 academic year, the Deans and a cross-University team identified shifting DORED personnel salaries from F&A return funding to state funding as a strategic priority. That strategic plan

has been shared with Academic Affairs and DORED, and seeks to have DORED personnel fully funded on state funds by July 1, 2025.

Timeline: Discussions between the Division of Business and Finance, Academic Affairs, and DORED are necessary, to enable a reasonable timeline for progressing on this goal to be developed for the University. The plan should be finalized by 1/1/2022 to enable implementation actions to begin 7/1/2022, since visible progress in this area is critical to North Carolina A&T moving toward R1 designation.

Accountability: Division of Business and Finance and DORED

(iv) DORED Providing Trained Research Officers to Support Each Academic College
Current situation: Only a subset of colleges has research officers. The existing college level research officers are funded from a mix of sources, but typically from college level funds.

Required changes: All colleges require designated research support staff. Some colleges require a portion of a person's time, and other colleges require multiple support staff. The positions should be permanently funded positions.

Timeline: A plan has been proposed and circulated to Deans. Discussions are being held to add details to the plan. Finalize the plan by 7/1/2021. Begin implementation of the plan 8/1/2021, with full implementation of the plan over a 3-year period.
Accountability: VC for Research and Economic Development.

(v) Faculty Workload Policy:
Current situation: The University Policy that addresses faculty workload, does address research, including the opportunity to buyout of courses. However, it does not offer a standardized definition of "course-buy" out. See: https://hub.ncat.edu/administration/legal/policies/sec2-acad-affairs/AA-Faculty-Workload-Final-2015.pdf. Further, the DORED release time policy does not provide a standard definition.[3] That policy simply states that it cannot exceed 25%, but it is left to colleges to determine the exact amount.

Required changes: It is important as part of the R2-R1 conversation to build a standard definition of workload across colleges and set a standard salary percentage for a course buy-out that is the same percentage for all faculty. Currently, there is a great deal of variability across the colleges of the University, where it ranges from colleges using a 5 course per semester definition of workload with no definition of research expectations to others using a 5 courses per year definition of teaching workload with additional specifications on research and service responsibilities. Common to R1 universities is a 4 per semester workload, with 2 actual courses taught, 1 reserved for research, and 1 reserved for other activities such as mentoring students and university service. As we work towards becoming a competitive doctoral research university, it will be important for all colleges to use a common set of language and calculations around faculty workload. This will allow for a set definition of a course buyout, e.g., on a 4-block workload, a course buyout would be one block, or 25% of a semester salary.

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[3] See: https://hub.ncat.edu/administration/legal/policies/sec5-res-econ-dev/release-time-061819.pdf

Timeline: 2021-2022
Accountability: Provost's Office working with the Deans

(vi) Course buy-out/Release-Time:
Current situation: As related to course buyouts and other grant related release time, it is important to understand the way salary savings are reallocated. A faculty member who is 100% State funded, and who buys out some of their workload time using grant funds saves State salary dollars. It is common among R1 universities that these savings are reinvested in the department in which the savings occurred. Reinvestment allows for funding of things like additional faculty release time, graduate students, etc., and are typically at the discretion of the relevant department chair. At A&T there is inconsistency on spending these monies in the units where they were generated. Part of the challenge is the timing of the release time as relevant to the end of the State fiscal year. It is possible that some of these monies could be rolled forward in the budget with permission by the State.
Required changes: It is recommended that salary savings from grant and contract related release time, be reinvested where they are generated. These monies should be added to the relevant department budget to be spent within one calendar year from the time that they were generated. This will allow for planned and strategic spending without an over accumulation of unspent funds.

Timeline: 2021-2023
Accountability: VC of Business and Finance; VC of Division of Research and Economic Development

(vii) Re-assignment of Duties
Current situation: The UNC System permits faculty to have a one-semester paid re-assignment of duty (equivalent to a sabbatical leave). Faculty reassigned time i.e. sabbaticals, are infrequently used to maintain faculty leading-edge research skills because chairs to not support them as they exacerbate heavy teaching loads.[4] During this time, it is expected that eligible faculty members are able to apply for this time to dedicate their time to strengthen their research skills. The process of strengthening research skills is dependent on the discipline or the research field but should be an opportunity for this faculty to use the reassigned time to acquire new skills that they do not have access to at N.C. A&T. Acquiring such skills and bringing that back to NC A&T is an asset to the University and will strengthen research opportunities for the faculty and students.

Required changes: Due to the limited number of faculty with the expertise to teach certain courses, chairs find it difficult to find a replacement for the faculty to have reassigned duties as this will disrupt the teaching schedule of the department. Another hurdle is that in order for faculty to make the most use of this time, travel is required. However, funds to support these activities are not available. A consideration would be to seek funds so that at least half the colleges can send one faculty member annually for a productive reassignment of duties.

Timeline: 2021-2023
Accountability: Provost, Deans and HR

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[4] (https://www.ncat.edu/provost/docs/faculty-reassigned-time-policy.pdf)

III. Doctoral Degree Strategy:

As North Carolina A&T plans for the future, its graduate programs will be critical in positioning the University to pursue the R1 Carnegie classification.   Specifically, the strength, breadth, and productivity of its doctoral programs will determine the University's fitness to attain and sustain the R1 "extremely high research activity" classification.

Current Situation:

Table 1 displays the eleven existing doctoral programs at N.C. A&T.

Table 1: The Existing Doctoral Programs at North Carolina A&T

Doctoral Program Name	Discipline Category: (STEM, Social Sciences, Humanities, Other)	UNC System Funding Category
Applied Science & Technology	STEM	3
Agriculture and Environmental Sciences	STEM	3
Computational Data Science & Engineering	STEM	4
Computer Science	STEM	3
Electrical Engineering	STEM	4
Industrial & Systems Engineering	STEM	4
Leadership Studies	Multi/Interdisciplinary Studies	1
Mechanical Engineering	STEM	4
Nanoengineering	STEM	4
Rehabilitation Counseling & Rehabilitation Counselor Education	STEM	3
Social Work	Social Sciences	1

As shown, the majority of the doctoral programs at N.C. A&T are STEM programs.   This strongly suggests that the depth of engagement of faculty in research activities and in ensuring a strong research culture at the university is not as pervasive as required for a healthy research institution.

Currently, the decision of which doctoral programs will be pursued by the University is made largely by advocacy, using a process that has continued to evolve. In every case, the idea for a doctoral program begins locally with an academic department and its college, followed by the relevant Dean advocating for the degree program with the Provost. During the 2020-2021 academic year, if the Provost approved of the proposed program, the advocating Dean had the opportunity to present a brief overview of the program to the Deans Council, followed by a vote by the Deans on which three academic programs to move forward to the UNC System queue. While the current process is streamlined, allowing several programs to move forward in a single year after a single meeting, a strategic discussion of rounding out the University's graduate program portfolio is not the driver of the decision process.

The current processes of evaluating graduate-level academic programs at N.C. A&T include a review of graduate productivity, in part because it is a metric measured by the UNC System. Yet a thorough assessment of whether the University's support (i.e., faculty, graduate student support dollars, facilities, etc.) of existing graduate programs meets state-wide/national benchmarks is absent, as is an accurate and thorough pre-analysis of the University resources required for a proposed doctoral program to be successfully launched and sustained. It is also important to mention that the UNC System explicitly

states that Universities are not permitted to request funds to support the establishment of new academic programs.

Required changes:
A task force should be established to draft a 5-year graduate education masterplan for North Carolina A&T State University. The charge of the task force should begin with an understanding of the graduate program portfolio required for the University to successfully transition to (and sustain) the R1 Carnegie classification. In collaboration with the Provost, VC of DORED, and the Deans, the taskforce should identify gaps in the University's current graduate degree program offerings, recommend solutions for ensuring the health of existing graduate programs, recommend the reform of existing programs, and recommend a prioritized order of new programs for submission to the UNC System. To accomplish the latter, the task force's actions should include appropriate market analyses (e.g., program student demand, employment opportunities, alignment with the University's transition to a R1 institution, etc.).

A healthy graduate program portfolio also requires the university to allocate funding to support the maintenance of existing programs and support the planning and implementation of each new program.

Timeline: *Begin July 1, 2021 and increase the numbers annually*
Accountability: Provost's Office and Graduate College in collaboration with Deans

SUMMARY OF RECOMMENDATIONS

- NC A&T will need to increase the number of doctoral degrees conferred annually.
- N. C. A&T will need to develop a strategic plan toward increasing the number of doctoral programs for the university.
- NC A&T will need to increase the number of doctoral programs in the social sciences. Areas with potential for growth include clinical psychology, applied economics and a nursing doctoral program (name/title to be determined).
- N.C. A&T will need to dedicate funds to increase the number of doctoral graduate assistantships distributed directly to the academic colleges.
- N.C. A&T will need to establish a fundraising strategy for scholarships for doctoral training.

IV. Hiring of Faculty and Research Staff
Current Situation

The Carnegie Classification takes into consideration the number of research staff/postdoctoral fellows who participate and contribute to research at an institution. It is considered that offering opportunities for training individuals beyond that graduate student level is critical in shaping the careers of future research scholars. Often, funding to support postdoctoral fellows comes from grants and faculty will need to be encouraged to do so, but not at the expense of doctoral students. In addition, having staff at the university dedicated to maintaining research facilities (i.e. research staff) is a critical metric for Carnegie classification. Such positions allow faculty to focus on conducting high-quality and competitive research that will help increase the amount of funding available at N.C. A&T.

A few investments have been made through Advancement and Development to attract high quality faculty in the form of endowed chairs. The current status of these positions is shown below:

(a) University Endowed Chairs - 20
5 occupied

Duke Energy Eminent Professor:	Dr. Abdollah Homaifar
E Systems Endowed Professor:	Dr. Jaganathan Sankar
Fort Professor:	Chancellor Emeritus Edward Fort
News & Record JB Howroyd Endowed Professor:	Dr. Robbie Morganfield
WK Kellogg Distinguished Professorship:	Dr. Chyi-lyi (Kathleen) Liang

4 searches currently underway
    Blue Cross and Blue Shield of North Carolina Urban Food Systems Endowed Professorship
    UPS Endowed Professor and Director of the Transportation Institute
    Harry E. Frye Distinguished Professor
    Clara Adams Ender Endowed Professor
11 additional vacant

(b) Quality faculty and postdoctoral research scientist potential hires are lost to other universities due to slowness of A&T hiring process and salaries lower than at R1 institutions; and due to non-competitive salaries of existing faculty, and an unpredictable competency protocol that requires existing faculty to seek and obtain external offers. The UNC System offers a link for comparing salaries, and it is recommended that such comparisons are made at peer institutions within the State when hiring faculty with similar qualifications.[5]

In 2019 a small group was tasked with identifying possible areas of research strengths within the university. While this should be re-examined, the outcome is shown below. Three cluster faculty hire areas have been identified:

- Health Disparities: Focus on health and health-care disparities and the social, economic, and environmental factors that give rise to the disparities. Particular areas of interest are diabetes and related diseases, Alzheimer's and related diseases, heart disease, and social determinants of health,
- Data Science and Analytics: An interdisciplinary approach to the science and analytics of data. Areas include data mining and statistical analysis, statistical modeling, database management, business intelligence and strategy, machine learning, data visualization and presentation, operations-related data analytics, and cloud and distributed computing.
- STEM Education: An integrated research-based approach to STEM education with a focus on implementing research-based practices that support STEM education.

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[5] (https://uncdm.northcarolina.edu/salaries/index.php , FY 2020 Salary Ranges for UNC System Constituent Institutions)

Required Changes/Strategies

1) It is recommended that new dedicated funds are allocated for each college annually for attracting faculty using competitive start-up packages. The funding must be competitive for attracting faculty commensurate with that of R2 universities with the goal of improving this over 5 years to match R1 institutions (This needs to be beyond Title III funds). It is also recommended that there be an increase in the number of faculty lines across departments to cover both instructional needs and research needs. (Currently we do not have enough faculty to cover the instructional needs leading to increased workloads and reduced capacity for research of doctoral training)

2) Increase Endowed Chairs
   • Tenured Associate Professor or above
   • Prestigious appointment typically for a 5-year appointment
   • Targeted on recruiting or retaining experienced faculty
   • Faculty bring significant reputation and/or research to the University

3) We must offer competitive salaries to faculty and research staff (postdoctoral fellows).
   • Incentive performance of faculty and programs that exemplify the qualities of research activity to align with those of similar stature and discipline at R1 institutions. This incentive should not deter the productivity of non-research productive faculty or programs whose work meets other missions of the university. Accountability needs to be between Academic Affairs and the Office of Business and Finance.

4) We need each department to have a strategic budget plan – related to enrollment, hiring that ties to university priorities and university funding.

RECOMMENDATIONS
   • Develop a new hiring sequence for faculty. The search process must begin early and be completed in a timely fashion to ensure that competitive candidates are sought and recruited.
   • Strategic recruitment and retention of tenured and tenure-track faculty
   • Comprehensive salary analysis should be conducted and acted upon to align the university's compensation approach with R1 institutions.
   • **NEW** funds will need to be dedicated to faculty who will focus on strengthening the doctoral education of the university.
   • Establish a new hiring sequence for Research Staff (*including postdoctoral fellows*)

Timeline: Begin July 1, 2021 and increase the numbers annually.
Accountability: HR, Academic Affairs, DORED and the Office of Business and Finance

V. **The University's Reporting of Research Expenditures** and Impact on the HERD Survey: STEM *vs*. non-STEM

The Carnegie classification takes into consideration research expenditures as a metric for ranking. The taskforce recommends that the Office of Business and Finance and DORED and OSPIE work together to ensure that all funds for research expenditures are captured for upcoming reporting

cycles. Appendix A has an excerpt of data from the HERD survey that shows the ranking of N.C. A&T relative to other UNC System institutions and a select group of HBCUs for comparison.

Research and Development (R&D) Expenditures include:
• Equipment and supplies purchased for research labs;
• Travel to Conferences to present research and scholarly activity.
• Travel to Sponsors to discuss research projects;
• Travel and honorarium costs associated with bringing research speakers to NC A&T for Seminars;
• Start-up, bridge, or seed funding provided to researchers;
• University research separately budgeted for individual R&D projects
• Internal research projects
• Departmental research faculty time devoted to non-sponsored research project provided:
• Scope of Work is on file with department and research project title is shown on costing allocation;
• Costing Allocation denoting research time is entered with additional Internally Funded Research work;
• Undergraduate Research Awards;
• Research projects funded with Foundation Accounts.

Research and Development (R&D) Expenditures DO NOT include:
• Curriculum development (unless included as part of an overall research project);
• R&D conducted by university faculty or staff at outside institutions that is not accounted for in NC A&T financial reports;
• Estimates of the proportion of time budgeted for instruction that is spent on research;
• Capital projects.

RECOMMENDATIONS
OSPIE/Business and Finance will need to work with the Academic Deans to discuss how departments/colleges can better account for funds used annually for Research. This process needs to begin in May 2021 to capture expenditures for 2020-21. Funds will vary from department to department but at a minimum will include:
• Research assistantships
• Travel for research
• Funds for equipment
• Funds for start-up costs

Timeline: The 2020-21 expenditures must be accurately captured for submission to the upcoming HERD survey.

Accountability: Deans, OSPIE, Office of Business and Finance

Appendix A. HERD Survey[6]

Higher education R&D expenditures, ranked by all R&D expenditures, by source of funds: FY 2019

(Dollars in thousands)

Institution	Rank	All R&D expenditures	Source of funds					
			Federal government	State and local government	Institution funds	Business	Nonprofit organizations	All other sources
All institutions	-	83,496,348	44,455,265	4,495,452	21,109,703	5,053,576	5,683,937	2,698,415
Johns Hopkins U.[a]	1	2,917,436	2,482,130	7,526	152,043	105,805	166,571	3,361
U. North Carolina, Chapel Hill	12	1,153,773	720,613	9,455	293,561	44,962	67,773	17,409
North Carolina State U.	49	541,100	228,945	123,196	127,691	55,085	5,749	434
East Carolina U.	195	55,611	17,428	516	28,806	4,076	4,714	71
U. North Carolina, Charlotte	206	47,187	26,199	962	15,946	2,877	941	262
Howard U.	210	44,163	29,978	1,478	8,386	3,685	636	0
Florida A&M U.	215	42,470	35,362	1,647	4,651	543	267	0
North Carolina Agricultural and Technical State U.	228	37,339	23,863	347	12,615	208	208	98
U. North Carolina, Greensboro	252	26,325	18,923	268	5,804	194	149	987
Delaware State U.	265	23,017	12,179	498	10,315	25	0	0
Tuskegee U.	272	20,562	14,825	2,573	2,653	0	0	511
Jackson State U.	282	18,160	16,259	0	1,438	0	347	116
Prairie View A&M U.	284	18,018	9,346	4,886	3,454	221	111	0
U. North Carolina, Wilmington	288	17,515	7,174	6,472	2,444	964	396	65
North Carolina Central U.	294	16,227	13,503	233	NA	262	980	1,249
Tennessee State U.	298	15,236	8,962	752	5,443	66	13	0
Alcorn State U.	301	14,435	7,540	4,725	2,133	37	0	0
Hampton U.	308	13,605	13,390	0	215	0	0	0
Morgan State U.	310	13,253	11,952	336	507	278	58	122
Alabama A&M U.	313	12,840	8,277	4,405	19	139	0	0
Virginia State U.	327	11,457	6,636	1,527	2,262	71	954	7
Xavier U. Louisiana	336	10,152	8,679	514	932	0	27	0
Clark Atlanta U.	348	9,048	5,689	0	3,207	22	130	0
Norfolk State U.	360	8,050	8,046	0	4	0	0	0
U. Maryland, Eastern Shore	370	7,133	6,983	109	0	41	0	0
West Virginia State U.	390	5,829	4,592	886	318	33	0	0
Southern U. and A&M C., Agricultural Research and Extension Center	396	5,448	3,057	2,323	68	0	0	0
Texas Southern U.	411	4,893	3,238	922	662	36	35	0
U. of the District of Columbia	413	4,800	3,283	62	1,455	0	0	0
Fisk U.	415	4,748	4,615	0	0	47	86	0
Fayetteville State U.	417	4,695	2,168	476	1,793	168	90	0
U. North Carolina, Asheville	420	4,602	1,846	203	418	13	2,122	0
Morehouse C.	423	4,564	4,494	0	0	0	0	70
Southern U. and A&M C., Baton Rouge	425	4,492	3,243	290	704	255	0	0
U. North Carolina, general administration	431	4,154	213	3,941	0	0	0	0
South Carolina State U.	450	3,659	3,659	NA	NA	NA	NA	NA
Appalachian State U.	464	3,268	1,332	337	657	580	357	5
Grambling State U.	480	2,836	1,066	670	1,100	0	0	0
Spelman C.	485	2,751	2,004	0	560	187	0	0
Western Carolina U.	493	2,633	1,736	154	477	113	153	0
Alabama State U.	495	2,577	2,577	0	0	0	0	0
Winston-Salem State U.	537	2,011	2,011	0	NA	0	0	0
Bowie State U.	546	1,911	1,911	0	0	0	0	0

[a] Johns Hopkins University includes the Applied Physics Laboratory, with $1,725,018 thousand in total R&D expenditures in FY 2019.

Source(s): National Center for Science and Engineering Statistics, Higher Education Research and Development Survey, FY 2019.