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East Carolina University Comprehensive Master Plan

Functionality Assessment

Internal Team Work Paper on Methodology and Process
for Review and Refinement with Smith Group
Draft #2—January 13, 2010

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East Carolina University
Comprehensive Master Plan
Work Paper on *Functionality Assessment*
Draft #1—January 8, 2010

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OVERVIEW

Eva Klein & Associates (EKA) provides this work paper to describe the *Functionality Assessment*, one of several assessments of capital facilities needs being conducted to develop a vetted and prioritized *Capital Projects Plan* for East Carolina University's *Comprehensive Master Plan*.

DEFINITION OF THE FUNCTIONALITY ASSESSMENT

The *Functionality Assessment* adds another qualitative evaluation dimension to the traditional *Facilities Condition Audit* which addresses existing deficiencies and expected renewal needs of the buildings, as physical building systems and subsystems. The *Condition Audit* is an engineering-based evaluation, whereas the *Functionality Assessment* is a strategic/program-based evaluation, which seeks to answer the following questions:

*How well does the existing **facility (space)** meet contemporary and future functionality needs for the program(s) it is supposed to serve? or*

*What would be the requirements to upgrade and modernize the **facility (space)** to be plausibly equivalent to the functionality of a new facility of the same type, if built today?*

The *Functionality Assessment* takes into account factors of *programmatic uses and requirements*. Therefore, a key difference between the *Functionality Assessment* and the *Condition Audit* is that the *Functionality Assessment* is organized and conducted *by space types* (e.g., classrooms, teaching or research laboratories, offices, etc.), rather than by *building subsystems*. Also, it is a two-part methodology:

- (1) *Field Evaluations* of buildings against a set of pre-established *Space Functionality Criteria* that express functional performance features of space, by space types
- (2) Information about functionality and program needs from *User Group Interviews*.

INTEGRATION OF FINDINGS FROM CONDITION AUDIT AND FUNCTIONALITY ASSESSMENT

Typically, EKA and partner firms conduct the *Functionality Assessment* to derive original functionality/adequacy need data and then integrate findings with those of an existing set of condition deficiency and renewal findings.

- **Condition Deficiencies.** The maintenance and repair condition of the building and the state of its compliance with code requirements—usually including existing or deferred condition deficiencies and future capital renewal requirements
- **Quality, Adequacy, Suitability, or Functionality Deficiencies.** The quality of the building environment/spaces and its functional capability to support present and future functions properly.

When these two sets of findings are combined, the outcome typically is a set of major renovation or modernization projects that are intended to both remedy building system deficiencies and to modernize the space to correct dysfunctionality or obsolescence deficiencies. The *Functionality Assessment* can lead to considerations of use changes, whereas the *Condition Audit* typically would not. While “projects” typically are stated as whole-building renovations or modernizations, in practice, some priority buildings will be treated as whole renovations in a *Capital Projects Plan*; other condition or renewal or functionality corrections may remain in a list of smaller-scale projects and done in parts or pieces, as funds permit.

Although the focus of a *Condition Audit* and the focus of a *Functionality Assessment* differ, the findings inevitably will overlap. Thus, a process by which to merge and integrate the two sets of findings is essential methodology.

SCOPE

METHODOLOGY CUSTOMIZED FOR ECU

In the case of East Carolina University, responsibilities for qualitative assessment of existing facilities are shared among several of the Smith Group team's firms:

- ISES is performing a condition audit of 67 buildings, including essentially all (or most) ECU buildings
- EKA, with Smith Group, is assessing the functionality needs of selected academic, administrative, and support buildings (excluding those covered by Brailsford & Dunlavey)
- The equivalent evaluation of functionality of existing facilities and infrastructure are included in the scopes of work of other team firms:
 - Brailsford & Dunlavey is evaluating existing student service, housing, and athletic facilities
 - RMS Engineering is addressing infrastructure deficiencies
 - Martin Alexiou Bryson is addressing transportation and parking needs
 - Protection Engineering Group is addressing safety and security deficiencies and needs
 - Smith Group is assessing qualitative deficiencies or needs for clinical space.

EKA and Smith Group then will lead the team's efforts to integrate all the qualitative findings into a single integrated analysis of qualitative facility needs for the *Capital Projects Plan*.

Then, importantly, in Task 3-C, the qualitative findings (integrated condition and functionality) also will be integrated with those analyses that point to the need for new facilities or space, from the *Space Capacity Analysis* findings and from the *Special Purpose Analyses* (based on specific or unique program requirements) being conducted. In the final version of the *Capital Projects Plan*, *Condition/Functionality* projects are likely to be refined and restated once more, when combined with capacity-driven and program-driven needs for additional or expansion space.

SCOPE OF THIS EKA-SG FUNCTIONALITY ASSESSMENT

The balance of this work paper describes that portion of the qualitative assessment that is being conducted by EKA and Smith Group on the buildings not being addressed by the other specialist firms.

The EKA-SG *Functionality Assessment* will cover the buildings included in the ISES condition audit, with the following exceptions:

- Buildings less than 10 years old
- Buildings that have been comprehensively renovated/modernized within the last 10 years
- Residential, student support/activities, and athletics facilities (Brailsford and Dunlavey)
- Minor structures (less than 10,000 GSF).

Subject to ECU's review, the initial sort of buildings yielded a list of buildings to be covered by EKA-SG in this assessment—provided on the following two pages. The three-campus total and an explanatory note about the buildings omitted is at the bottom of the second page of the list.

Figure 1. ECU Buildings to be Included in Functionality Assessment by EKA-SG

EKA-SG	BLDG #	BUILDING NAME	YR CONST	GSF	FLRS	ECU NOTES	EKA NOTES
Assessment Bldg Count*							
		MAIN CAMPUS					
1	003	GRAHAM BLDG	1929	16,080	03		
2	004	RAWL BLDG	1959	73,524	04		
3	006	AUSTIN BLDG	1964	63,866	03		
4	008	BREWSTER A	1970	36,856	04		Counted as Single Building
4	008	BREWSTER B	1970	19,500	03		
4	008	BREWSTER C	1970	19,500	03		
4	008	BREWSTER D	1970	42,600	03		
5	001	JOYNER LIBRARY	1954	129,963	03	Renovated 1997	Counted as Single Building
5	001	JOYNER DRUM ADDTION	1996	150,612	04		
5	001	JOYNER EAST	1975	30,118	02	Renovated 1997	
6	049	ERWIN HALL	1952	14,652	03		Counted as Single Building
7	033	MCGINNIS THEATRE	1951	26,692	02	Renovated 1980	
7	033	MCGINNIS SCENE SHOP	1982	9,600	02		
8	034	MESSICK THEAT ARTS	1927	35,038	02		
9	030	SPILMAN BLDG	1930	16,720	02		
10	031	WHICHARD BLDG	1923	23,470	02		
11	012	SPEIGHT BLDG	1965	50,562	03		
12	005	HOWELL SCIENCE	1969	11,725	04		Counted as Single Building
12	005	HOWELL SCIENCE EAST	1969	31,948	03		
12	005	HOWELL SCIENCE NORTH	1970	31,948	04		
12	005	HOWELL SCIENCE SOUTH	1969	31,948	05		
13	014	JENKINS FINE ARTS CT	1977	109,994	03		
14	032	WRIGHT	1968	49,279	03		
14	032	WRIGHT AUDITORIUM	1925	33,986	02	Renovated 1990	
15	009	FLETCHER MUSIC CTR	1966	58,950	02	Partial Reno 2006	
16	011	RIVERS SCH OF NURS	1967	30,152	02	Not Medical	
16	010	RIVERS HESC	1968	43,845	03		Counted as Single Building
16	010	RIVERS ADDITION	2004	38,249	02		
	037	MINGES COLISEUM	1967	155,598	02	Renovated 1994	B&D
	038	SCALES FIELD HOUSE	1966	14,349	01		B&D
17	043	WAREHOUSE/TECH LAB A	1951	24,932	02	Partial Reno 1996	
	046	STUDENT HEALTH SRVCS	1930	11,744	02	Renovated 2002	B&D/Recent Reno
	046	STUDENT HEALTH ADDTN	2002	16,508	01		B&D
	055	MENDENHALL STUD CTR	1974	116,900	03	Renovated 1987	B&D
18	056	WILLIS BUILDING	1974	15,366	01		
19	060	STEAM PLANT 14TH ST	1968	16,914	01		
	070	JONES RESIDENCE HALL	1958	103,520	04	Partial Reno 2002	B&D
	071	AYCOCK RESID HALL	1960	89,516	04		B&D
	072	SCOTT RESIDENCE HALL	1962	98,087	04		B&D
	073	BELK RESIDENCE HALL	1966	80,950	04		B&D
	074	TYLER RESIDENCE HALL	1969	96,105	09		B&D
	075	UMSTEAD RESID HALL	1955	48,512	03	Renovated 1995	B&D
	076	SLAY RESIDENCE HALL	1949	34,269	03	Converted to Offices 2003	Recent Reno
	077	GREENE RESID HALL	1966	82,731	10		B&D
	078	WHITE RESIDENCE HALL	1968	82,731	10		B&D
	079	CLEMENT RESID HALL	1969	86,044	10		B&D
	080	FLETCHER RESID HALL	1964	80,649	07		B&D
	081	GARRETT RESID HALL	1956	53,344	03		B&D

Figure 1 (Continued). ECU Buildings to be Included in Functionality Assessment by EKA-SG

EKA-SG	BLDG #	BUILDING NAME	YR CONST	GSF	FLRS	ECU NOTES	EKA NOTES
Assessment							
Bldg Count*							
	082	JARVIS RESID HALL	1909	34,467	02	Renovated 2000	B&D
	083	FLEMING RESID HALL	1923	32,428	02		B&D
	084	COTTEN RESID HALL	1925	47,088	03		B&D
20	085	RAGSDALE HALL	1923	41,144	03		
21	095	HAROLD H. BATE BLDG	1988	165,000	03		
22	097	WARD SPORTS MED FAC	1989	76,695	03		
23	127	HUMAN RESOURCES	1973	12,250	02		
	130	TODD DINING HALL	1994	35,000	01		B&D
	142	STUDENT REC CENTER	1996	150,227	02		B&D
24	156	HARRIS BLDG	1997	19,325	01		
	163	FICKLEN STADIUM	1963	58,819	04	Partial Reno 1997	B&D
	164	DAILY REFL #1	1955	29,137	02	Renovated 2002	B&D/Recent Reno
25	174	STRENGTH CENTER	2001	52,475	03		
26	193	GREENVILLE CENTRE	1991	35,289	02		
	086	CHANCELLOR RESIDENCE	1948	7,016	02		Under 10,000 SF
		TOTAL--MAIN		3,336,506			
		HEALTH SCIENCES CAMPUS					
27	015	BRODY MEDICAL SCI BLDG	1982	480,279	08		
28	088	LIFE SCIENCES BLDG	1980	17,090	01		
	088	LIFE SCIENCES BLDG ADD	1999	58,392	02		
29	089	MEDICAL HEATING FACILITY	1980	11,863	01		
	089	INCINERATOR ADDITION	1999	16,672	02		
30	090	LEO JENKINS CANCER CENTER	1984	39,155	02		
31	113	BIOTECHNOLOGY BLDG	1991	28,152	02		
32	115	FAMILY PRACTICE CENTER	1975	29,200	01		
33	099	MEDICAL PAVILION #2	1966	2,171	01		Under 10,000 SF but counted as single building (Question: SG to apply criteria for clinical spaces?)
33	099	MEDICAL PAVILION #3	1966	1,101	01		
33	138	MEDICAL PAVILION #7	1966	869	01		
33	139	MEDICAL PAVILION #9	1966	1,218	01		
33	140	MEDICAL PAVILION #10	1966	1,326	01		
33	149	MEDICAL PAVILION #5	1966	2,222	01		
33	153	MEDICAL PAVILION #1	1966	1,261	01		
33	173	MEDICAL PAVILION#6	1966	4,006	01		
33	116	MEDICAL PAVILION #4	1966	1,400	01		
33	117	PHYSICIANS QUAD "C"	1966	2,484	01		
33	118	PHYSICIANS QUAD "M"	1978	3,472	01		
33	119	PHYSICIANS QUAD "N"	1974	3,636	01		
		TOTAL HEALTH SCIENCE		705,969			
		WEST RESEARCH CAMPUS					
34	171	WEST ACADEMIC BLDG	1960	24,047	01		
		TOTAL WEST RESEARCH		24,047			
		ALL THREE CAMPUSES—ALL GSF		4,066,522			
		ALL THREE CAMPUSES—Included in this Assessment		2,420,783			

* 33 included buildings are shown in black; those eliminated from this Functionality Assessment shown in GRAY.

METHODOLOGY

TASK 1—DEFINE THE SPACE FUNCTIONALITY CRITERIA

Space Functionality Criteria describe or define a baseline set of qualitative characteristics that, together, make a space suitable to the conduct of a particular program.

The *Space Functionality Criteria* are created for each **space type** to be evaluated, with the space types related to the *Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition Room Use Codes*.

Based on the foregoing description of how responsibilities are assigned among the SG team, *Space Functionality Criteria* were developed for ECU, for use in the EKA-SG *Functionality Assessment*, for the following facility space types represented in the above building list:

I—GENERAL ACADEMIC AND ADMINISTRATIVE SPACE

These are basically non-science and technology spaces.

- Classroom Facilities
- Office Facilities
- Study Rooms
- Library Stack and Service/Processing

II—LABORATORIES—INSTRUCTIONAL AND RESEARCH

The initial set of *Criteria* (Class Laboratories—General Requirements) provides a baseline set of functionality criteria for labs; the remaining additional ones provide additional *Criteria* for sub-types of laboratory spaces and specialized laboratory support spaces:

- Class Laboratories—General Requirements
- Dry Laboratories—Additional Requirements
- Wet Laboratories—Additional Requirements
- Computer Laboratories—Additional Requirements
- Studio Laboratories—Additional Requirements
- Research Laboratories—Additional Requirements
- Animal Quarters
- Hazardous Material

III—SUPPORT SERVICES

- Support Services Facilities (various types/uses)

As reference, Figure 2 (following page) provides the entire set of FICM *Room Use Codes*. Those FICM *Room Use Codes* that are included in this *Functionality Assessment* are highlighted in blue.

Appendices I, II, and III provide, for each of the above three categories of spaces:

- Space Characteristics (to evaluate)
- Space Functionality Criteria
- Evaluation (Evaluator's Notes)

Figure 2. FICM *Room Use Codes* for Space Types Included in this Functionality Assessment

Those covered in this *Functionality Assessment* are highlighted in boldface; those excluded are GRAY.

100 Classroom Facilities	640 Day Care
110 Classroom	645 Day Care Service
115 Classroom Service	650 Lounge
	655 Lounge Service
200 Laboratory Facilities	660 Merchandising
210 Class Laboratories	665 Merchandising Service
215 Class Laboratories Service	670 Recreation
220 Open Laboratory	675 Recreation Service
225 Open Laboratory Service	680 Meeting Room
250 Research/Non-Class Laboratory	685 Meeting Room Service
255 Research/Non-Class Laboratory Service	
	700 Support Services
300 Office Facilities	710 Central Computer or Telecommunications
310 Office	715 Central Computer or Telecommunications Service
315 Office Service	720 Shop
350 Conference Room	725 Shop Service
355 Conference Room Service	730 Central Storage
	735 Central Storage Service
400 Study Facilities	740 Vehicle Storage
410 Study Room	745 Vehicle Storage Service
420 Stack	750 Central Service
430 Open-Stack Study Room	755 Central Service Support
440 Processing Room	760 Hazardous Material
455 Study Service	765 Hazardous Material Service
	800 Health Care Facilities
500 Special Use Facilities	810 Patient Bedroom
510 Armory	815 Patient Bedroom Service
515 Armory Service	820 Patient Bath
520 Athletic or Physical Education	830 Nurse Station
523 Athletic Facilities Spectator Seating	835 Nurse Station Service
525 Athletic or Physical Education Service	840 Surgery
530 Media Production	845 Surgery Service
535 Media Production Service	850 Treatment/Examination
540 Clinic	855 Treatment/Examination Service
545 Clinic Service	860 Diagnostic Service Laboratory
550 Demonstration	865 Diagnostic Service Laboratory Support
555 Demonstration Service	870 Central Supplies
560 Field Building	880 Public Waiting
570 Animal Quarters	890 Staff On-Call Facility
575 Animal Quarters Service	895 Staff On-Call Facility Service
580 Greenhouse	
585 Greenhouse Service	900 Residential Facilities
590 Other (All Purpose)	910 Sleep/Study Without Toilet or Bath
	919 Toilet or Bath
600 General Use Facilities	920 Sleep/Study With Toilet or Bath
610 Assembly	935 Sleep/Study Service
615 Assembly Service	950 Apartment
620 Exhibition	955 Apartment Service
625 Exhibition Service	970 House
630 Food Facility	
635 Food Facility Service	

TASK 2—CONDUCT FIELD EVALUATIONS OF THE SELECTED BUILDINGS

Appendices I, II, and III provide the *Space Functionality Criteria* organized into *Field Evaluation* worksheets with a column called *Evaluation* that provides some guides and pre-set possible observations that are used to organize observations from building walk-throughs. *Evaluation* comments and notes on these forms are recorded for analysis of preliminary *Functionality* requirements. For example, in a field evaluation of a building with several space categories, such as general classrooms, teaching laboratories, and offices, the evaluator would make notes about space characteristics in several evaluation forms that are associated with the building's space types.

Comments on specific spaces or groupings of similar spaces are noted and provide a complete a set of notes on a building. The evaluator's comments must be specific enough to provide a resource for defining capital projects and estimating their costs. Also, later, these observations will be evaluated with the *Condition Audit* data, in refinement of the *Capital Projects Plan*. Thus, the *Evaluation Notes* must convey the actual field observations as clearly and concisely as possible, with the expectation of use as a shared resource.

Subject to discussion with Smith Group and ECU, it is proposed that the *Field Evaluation* team consist of:

- Smith Group representative (probably Mark Potter)
- EKA representative (Harvey Kaiser)
- ECU Facilities Management representative (knowledgeable about the buildings and with user interface experience).

In addition to the worksheets that contain the Functionality Criteria and the Evaluation notation space, the team will organize and take along for each building to be evaluated:

- Print-outs of ISES condition audit reports
- Floor plans.

In addition, the team will take a digital camera. One person will take photos and make notations.

TASK 3—CONDUCT INTERVIEWS WITH BUILDING USER GROUPS

After the team has digested and organized the *Field Evaluation* data, interviews are conducted with groups of users—organized by schools, groups of departments, a single building, or a group of related buildings. The initial selection of user groups is itself an important part of the *Functionality Assessment* methodology, as the interviews need to generate information that is balanced between being too general and too specific. The client assists the consultants in determining how to organize representatives of users in ways that relate to buildings.

Interviews are conducted using a protocol to structure the discussion and maintain focus on *qualitative deficiencies and needs*. Detailed accurate notes are essential, as these are important data used in tandem with *Field Evaluation* data.

It is proposed that EKA team members Harvey Kaiser and Joe Carter will conduct these interviews. ECU could assist greatly by providing note-takers to support Drs. Kaiser and Carter.

Figure 3. User Group Interview Protocol (Draft—Subject to Revision)

East Carolina University
 Comprehensive Master Plan
 Building User Group Interviews / Draft #1 / January 2010

Interview Group: _____ Interviewer(s): _____
 Date: _____

Interviewer introduces self and provides brief intro remarks about planning process and purpose/scope of these building user group interviews.

1. **Longevity in Location and Flexibility About Location.** How long has your program (department, etc.) been located in its current facilities? Are there any important programmatic reasons why your programs (departments, school, etc.) **MUST** be located in this (these) buildings? Or, could you envision that you might be able to function equally well or better in another location (assuming that it is appropriate space)?

2. **Future Changes—Planned or Likely.** Do you anticipate (or are you planning) any changes (program, activities, pedagogy, technology, different equipment, etc.) that would lead you to organize, assign, configure or use your program (department, school) space differently in the future from how it is organized now?

3. **Evaluation of Existing Space Characteristics (Suitability, Adequacy, Functionality).** Please comment on the following:
 - a. What do you consider to be the (3) best characteristics about your space? *(Prompts: Location on campus, condition, configuration, amount of space, flexibility of use, etc.)*

 - b. What do you consider to be the (3) least positive characteristics of your space? *(Prompts: Location on campus, condition, configuration, amount of space, flexibility of use, etc.)*

 - c. Are there any other features of the space that make it inadequate or non-functional for program needs that you haven't mentioned?

TASK 4—COMPILE AND ANALYZE THE FINDINGS TO DERIVE PROJECT NEEDS

Upon completion of the user group interviews and the building inspections the analysis involves defining what qualitative improvements are required to bring the buildings to the equivalent of contemporary functionality and adequacy for designated programmatic purposes.

TASK 5—MAKE PRELIMINARY COST ESTIMATES

Architecture members of the team, together with the cost estimator, will estimate develop approximate costs for the functionality improvements/requirements identified. Now these findings will be ready to be integrated with the condition audit findings.

Figure 4 (next page) provides an example of an output report for a single large science building as a result of Tasks 1 through 5. The format may be modified for ECU.

TASK 6—INTEGRATE FINDINGS WITH CONDITION AUDIT AND MODIFY PROJECT STATEMENTS

In this final and critical step, integration yields an estimated cost for maintenance backlog and renovation/modernization projects. Calculation of the total costs to remedy a building's deficiencies (condition) and to bring its spaces to the equivalent of modern (functionality) are added together. In many cases, the project must be restated and the cost restated.

Then, the entire cost is divided by the Facility Replacement Cost (FRC), to provide a *Facility Condition and Functionality Index (FCFI)*. Similar to the FCI or FCNI (ISES), this is a metric in which the numerator includes both the corrections to condition and the corrections to functionality—integrated.

The *FCFI* provides one key input for project prioritization. *FCFI* data also identifies facilities that cannot be upgraded at reasonable cost, thus providing a basis for consideration of building demolition options or, alternatively, for revising the projects to convert existing buildings to alternate uses that can be upgraded at lower, or more reasonable, costs.

Task 6 requires further discussion among SG, ISES, and EKA, to determine best means of data integration and project revisions. Also, we have requested that ISES review the building list included herein.

Figure 4. Functionality Assessment Example of Summary Notes of Field Evaluation

Building Code / Name		SCI	Science Center
Department(s) / Users	<ul style="list-style-type: none"> Science Departments - Astronomy, Biological Sciences, Chemistry, Computer Science, Geology, Mathematics, Physics 		
	<ul style="list-style-type: none"> Psychology Department 		
	<ul style="list-style-type: none"> Interdisciplinary Departments 		
	<ul style="list-style-type: none"> Registrar (Classrooms) 		
	<ul style="list-style-type: none"> Science Center Library 		
	<ul style="list-style-type: none"> IT staff 		
Location(s) & Functional Use Relationships	<ul style="list-style-type: none"> Ground floor and five floors above 		
	<ul style="list-style-type: none"> Several wings in original Sage Building and more recent additions 		
	<ul style="list-style-type: none"> Complex internal circulation between wings and floors 		
	<ul style="list-style-type: none"> 1992 addition contains two floors of Library and two floors of teaching and research labs 		
	<ul style="list-style-type: none"> Central Atrium Ground Floor contains consolidated open plan workstations 		
Space Suitability and Functional Adequacy Observations from Walk-Through and/or from Users	<ul style="list-style-type: none"> Most science department offices are in close proximity to each other—Office configuration is acceptable to good 		
	<ul style="list-style-type: none"> Labs need to accommodate combination of teaching and research—not currently workable 		
	<ul style="list-style-type: none"> Unique equipment should be located as conveniently as possible to user department 		
	<ul style="list-style-type: none"> Reconfiguration of teaching labs is necessary to meet changing pedagogy 		
	<ul style="list-style-type: none"> Classroom reconfiguration is necessary to adapt to changing pedagogy 		
	<ul style="list-style-type: none"> There is a relatively poor match between room capacity and equipment with current and expected courses and class sizes—need to consider changing classroom sizes where feasible 		
	<ul style="list-style-type: none"> A few interdisciplinary programs/departments (e.g., Neuroscience) require special space planning treatment and space changes 		
	<ul style="list-style-type: none"> Additional offices are needed for strategic plan initiative to convert some non-tenure track positions to tenure-track positions 		
	<ul style="list-style-type: none"> Users feel that space dedicated to research labs is not adequate —consider as Capacity and/or Special Purpose question and review with administration (reassignment?) 		
	<ul style="list-style-type: none"> Users feel that space for Computer Science is inadequate (quantity / capacity issue, not qualitative)—consider as Capacity question (reassign some space from other depts?) 		
Functionality (and Some Condition) Deficiencies and Corrections Required	<ul style="list-style-type: none"> Possible relocation of IS staff elsewhere can free up Science Center space for hard science uses (IS staff does not need to be in this building) 		
	<ul style="list-style-type: none"> Sage wing needs complete renovation / modernization 		
	<ul style="list-style-type: none"> Technology infrastructure upgrades are needed throughout building 		
	<ul style="list-style-type: none"> Increased utilization for all classrooms can possibly create opportunities for offices conversions—review this with administration. If OK, include office conversion 		
	<ul style="list-style-type: none"> Condition and reliability of HVAC and MEP are inconsistent (based on user comments) throughout building—to confirm with condition audit data 		
	<ul style="list-style-type: none"> Improve internal circulation between exterior entrances, wings, and floors 		
	<ul style="list-style-type: none"> Correct code deficiencies throughout building (stairs, ADA, toilets, exterior entrances) 		
	<ul style="list-style-type: none"> Improve building energy efficiency 		
Overall Conclusion Capital Projects/ Functionality Project	<ul style="list-style-type: none"> Three-phase renovation project for space reconfiguration and building system upgrades Total Cost = \$ _____. 		
	Phase #1—Project Description	<ul style="list-style-type: none"> \$ _____ 	
	Phase #2—Project Description	<ul style="list-style-type: none"> \$ _____ 	
	Phase #3—Project Description	<ul style="list-style-type: none"> \$ _____ 	

APPENDICES

OUTLINE OF APPENDICES I, II, AND III

These Appendices are drafts of *Field Evaluation* worksheets that include (1) *Space Characteristics*; (2) *the Space Functionality Criteria* and (3) *Field Evaluation Notes* for the space types in this Assessment, organized into three main categories:

- Appendix I—General Academic and Administrative Space (except Teaching and Research Laboratories)
- Appendix II—Teaching and Research Laboratory Space
- Appendix III—Support Services Space

Summary lists of the Appendix Tables, with *Space Types*, *FICM Codes* and *Sub-Codes* below are then followed by the three Appendices of tables.

Appendix I—General Academic and Administrative Space				
Appendix Table #	Space Type	FICM Code	FICM Sub-Codes	Type of Facility
I-A	Classroom Facilities	100	110 115	Classrooms (all types) Classrooms Service
I-B	Office Facilities	300	310 315 350 355	Office Office Service Conference Room Conference Room Service
I-C	Study Room	400	410 411	Study Rooms
I-D	Library Stack and Processing/Service	400	420 430 440 455	Stack Open-Stack Study Room Processing Room Study Service

Appendix II—Teaching and Research Laboratory Space				
Appendix Table #	Space Category	FICM Code	FICM Sub-Codes	Type of Facility
II-A, II-B, II-C, II-D, and II-E	Class and Open Laboratories	200	210, 215, 220 and 225	Class Laboratories (scheduled and unscheduled) and Laboratory Service
II-A + others above + II-F	Research/ Non-Class Laboratories	200	250 and 255	Research (Non-Class) Laboratories and Service
II-G	Animal Quarters	500	570 and 575	Animal Quarters and Animal Quarters Service
II-H	Hazardous Waste	700	760 and 765	Chemical and Hazardous Waste Facilities and Service

Appendix III—Support Services Facilities				
Appendix Table #	Space Category	FICM Code	FICM Sub-Codes	Type of Facility
III-A	Support Services	700	720 and 725	Shop and Shop Service
III-A		700	730 and 735	Central Storage and Central Storage Service
III-A		700	740 and 745	Vehicle Storage and Vehicle Storage Service
III-A		700	750 and 755	Central Service and Central Service Support

NOTES ON LABORATORY SPACE FUNCTIONALITY CRITERIA

By definition, rooms in the FICM 200 series are outfitted such that they are relatively specific to given disciplines—the characteristic that differentiates them from Classrooms. (Note: In today's context, it may be that differentiation of labs may be reduced in future, as labs are designed to be somewhat more flexible in use.)

Teaching (Class) Laboratories (FICM Sub-Code 210) are those that are primarily *scheduled for instruction*. Another Sub-code, 220, designates "open" laboratories—used by students or faculty on a drop-in or sign-up basis, but not scheduled for instructional sessions. There may be Teaching (Class) Laboratories that are use both for scheduled sessions and "open." FICM *Room Use Codes* 250 and 255 are used to designate laboratories that are entirely or primarily used for research.

The first set of *Criteria* (Table II-A) provides a **baseline** or generic set of *Space Characteristics* and *Functionality Criteria* for Class Laboratories, which are features generally required of all lab types. Then, several **additional Functionality Criteria** are provided for several specific laboratory types and use, in additional tables, as follows:

- "Dry" Laboratories (Table II-B)
- "Wet" Laboratories (Table II-C)
- Computer Laboratories (Table II-D)
- Studio Laboratories (Table II-E)
- Research Laboratories (Table II-F)
- Animal Quarters (Table II-G)
- Hazardous Material (Table II-H)

So, for example, in evaluation of a floor of laboratories that are used primarily for wet lab life sciences research, the evaluator would use the *Space Functionality Criteria* in three Tables—II-A, II-C, and II-F—for evaluation of that space.

APPENDIX 1 TABLES—GENERAL ACADEMIC AND ADMINISTRATIVE SPACE

**APPENDIX TABLE I-A CLASSROOM FACILITIES
FICM CODES 110/115**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
<p>1. Functional Adequacy</p>	<p>The room configuration and the size and arrangement of student and instructional stations shall satisfy instructional requirements and provide adequate sight lines.</p>	<p> <input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Confirm size and square footage <input type="checkbox"/> Are programmatic requirements met – Sight lines - are classrooms set up for 9x16 media formats? <input type="checkbox"/> Storage <input type="checkbox"/> Utilization <input type="checkbox"/> Adaptability <input type="checkbox"/> Flat floor <input type="checkbox"/> Tiered <input type="checkbox"/> Sloped <input type="checkbox"/> Ceiling Height <input type="checkbox"/> Classroom waiting areas </p>
<p>2. Room Finishes</p>	<p>Floors shall be covered in an appropriate, easily cleaned material that will permit the room to be maintained in a neat and orderly condition. Walls and ceilings shall be finished in appropriate, easily cleaned materials. Color schemes and finish materials shall present a pleasing appearance conducive to teaching and learning.</p>	<p> <input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Floors <input type="checkbox"/> Walls <input type="checkbox"/> Ceilings </p>
<p>3. Acoustics and Sound Control</p>	<p>Floor covering, wall surface, and ceiling materials shall have appropriate sound absorption and reflective qualities, and insulation against outside noise shall be sufficient to provide a teaching and learning environment free of distracting noise levels.</p>	<p> <input type="checkbox"/> Sound attenuation for teaching <input type="checkbox"/> Seminar vs. lecture <input type="checkbox"/> Video conference requirements </p>
<p>4. Climate Control</p>	<p>Heating and cooling systems, together with adequate control systems, shall be installed that will permit the maintenance of a comfortable teaching and learning environment at all seasons of the year.</p>	<p> <input type="checkbox"/> Heating and cooling <input type="checkbox"/> NRC Rating </p>
<p>5. Lighting</p>	<p>The installed lighting system shall provide an adequate quality and level of lighting for the teaching and learning environment, and shall be provided with controls to vary or adjust the lighting level as required for specific needs. Appropriate window coverings shall be provided to permit unimpaired use of audio-visual or other teaching equipment.</p>	<p> <input type="checkbox"/> Sun control <input type="checkbox"/> Blackout control <input type="checkbox"/> Dimming and switching of fixtures </p>
<p>6. Electrical Service</p>	<p>Adequate electrical capacity and outlets shall be provided in the room to accommodate general teaching equipment, laptop computers, etc.</p>	<p> <input type="checkbox"/> Adequate outlets <input type="checkbox"/> Charging areas </p>

**APPENDIX TABLE I-A CLASSROOM FACILITIES
FICM CODES 110/115**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
7. Instructional Support	As required, classrooms shall be equipped to support instruction, including: <ul style="list-style-type: none"> • Connectivity to campus data networks and the Internet • Chalkboards, whiteboards, projection screens, or other teaching accessories • A full range of audio-visual equipment 	<input type="checkbox"/> White Boards <input type="checkbox"/> Blackboards <input type="checkbox"/> Chalk vs. Markerboards <input type="checkbox"/> Walktalkers (dry erasable wallcovering) <input type="checkbox"/> AV/IT – wireless <input type="checkbox"/> Projection - Rear projection <input type="checkbox"/> Document cameras <input type="checkbox"/> Media carts and cart storage
8. Installed Furniture and Fixtures	Fixed seating, when installed, shall be ergonomically correct, maintainable, provided with adequate tablet arms or table space for note-taking, and shall provide an unobstructed view.	<input type="checkbox"/> Fixed vs. non-fixed seating (type of seating meets program requirement) <input type="checkbox"/> Confirm view orientations with 9x16 media format

**APPENDIX TABLE I-B OFFICE FACILITIES
FICM CODES 310/315/350/355**

Space Characteristic	Space Functionality Criteria	Evaluation Notes	
1. Functional Adequacy	The space configuration, size and arrangement of workstations satisfy requirements for individual work tasks. Suitable space shall be available for faculty-student or supervisor-employee privacy in the vicinity of individual office/work space. Space for group meetings shall be adequate for the nature of meetings and typical numbers of participants.	<input type="checkbox"/> Spacious <input type="checkbox"/> Adequate <input type="checkbox"/> Small	<input type="checkbox"/> Furnishings adequate <input type="checkbox"/> Furnishings not adequate
2. Room Finishes	Floors shall be covered in an appropriate, easily cleaned material that will permit the room to be maintained in a neat and orderly condition. Walls, ceilings, and workstation partitions shall be finished in appropriate, easily cleaned materials. Color schemes and finish materials shall present a pleasing work environment.	<input type="checkbox"/> Renovated within past 5 years <input type="checkbox"/> Upgrade within 5 years <input type="checkbox"/> Poor (e.g. worn, obsolete)	
3. Acoustics and Sound Control	Floor covering, wall surface, and ceiling materials shall have appropriate sound absorption and reflective qualities. Insulation against outside noise shall be provided sufficient to provide a work environment free of distracting noise levels.	<input type="checkbox"/> Excellent / Appropriate <input type="checkbox"/> Adequate <input type="checkbox"/> Poor	
4. Climate Control	Heating and cooling systems, together with adequate control systems, shall be installed that will permit the maintenance of a comfortable work environment at all seasons of the year.	<input type="checkbox"/> Good <input type="checkbox"/> Limited control <input type="checkbox"/> Inadequate control	
5. Lighting	The installed lighting system shall provide an adequate quality and level of lighting for the work environment, and shall be provided with controls to vary or adjust the lighting level as required for specific tasks.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor	
6. Electrical Service	Adequate electrical capacity and outlets shall be provided to permit the unrestricted employment of office equipment.	<input type="checkbox"/> Good <input type="checkbox"/> Limited <input type="checkbox"/> Poor	
7. Information Technology	All office spaces shall have appropriate connectivity to campus data networks and the Internet.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor	List type of services eg:- WIFI, wall jack, etc.
8. Storage Space	An adequate amount of storage space for equipment and files appropriate to the function shall be provided.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Insufficient	

**APPENDIX TABLE I-C STUDY ROOMS
FICM CODE 410**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Functional Adequacy	The room configuration and the size and arrangement of seating and related study facilities shall satisfy learning and study requirements.	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Confirm size and square footage <input type="checkbox"/> Are programmatic requirements met – Sight lines - are classrooms set up for 9x16 media formats? <input type="checkbox"/> Storage <input type="checkbox"/> Utilization – conference –seminar - teaming <input type="checkbox"/> Adaptability <input type="checkbox"/> Flat floor <input type="checkbox"/> Tiered <input type="checkbox"/> Ceiling Height <input type="checkbox"/> Individual vs. group study
2. Room Finishes	Floors shall be covered in an appropriate, easily cleaned material that will permit the room to be maintained in a neat and orderly condition. Walls and ceilings shall be finished in appropriate, easily cleaned materials. Color schemes and finish materials shall present a pleasing appearance conducive to study.	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Floors <input type="checkbox"/> Walls <input type="checkbox"/> Ceilings
3. Acoustics and Sound Control	Floor covering, wall surface, and ceiling materials shall have appropriate sound absorption and reflective qualities; and insulation against outside noise shall be provided sufficient to provide a study environment free of distracting noise levels.	<input type="checkbox"/> Quiet study <input type="checkbox"/> Group Study <input type="checkbox"/> Presentation preparation requirements
4. Climate Control	Heating and cooling systems, together with adequate control systems, shall be installed that will permit the maintenance of a comfortable study environment at all seasons of the year.	<input type="checkbox"/> Heating and cooling <input type="checkbox"/> NRC Rating
5. Lighting	The installed lighting system shall provide an adequate quality and level of lighting for study, and shall be provided with controls to vary or adjust the lighting level as required for specific needs.	<input type="checkbox"/> Sun control <input type="checkbox"/> Blackout control <input type="checkbox"/> Dimming and switching of fixtures
6. Electrical Services	Electrical capacity and adequate outlets shall be provided to meet the needs of study space equipment and student computers and ancillary equipment.	<input type="checkbox"/> Adequate outlets <input type="checkbox"/> Charging areas

APPENDIX TABLE I-C STUDY ROOMS
FICM CODE 410

Space Characteristic	Space Functionality Criteria	Evaluation Notes
<p>7. Information Technology</p>	<p>As required, study rooms shall have appropriate connectivity to campus data networks and the Internet.</p>	<p> <input type="checkbox"/> White Boards <input type="checkbox"/> Blackboards <input type="checkbox"/> Chalk vs. Markerboards <input type="checkbox"/> Walktalkers (dry erasable wallcovering) <input type="checkbox"/> AV/IT – wireless <input type="checkbox"/> Projection <input type="checkbox"/> Document cameras <input type="checkbox"/> Media carts and cart storage <input type="checkbox"/> Computer stations <input type="checkbox"/> Language study aids </p>
<p>8. Fixed furniture and Equipment</p>	<p>Study carrels or tables and other forms of individual and group seating shall be provided.</p>	<p> <input type="checkbox"/> Confirm view orientations with 9x16 media format </p>

**APPENDIX TABLE I-D LIBRARY STACK AND PROCESSING/SERVICE
FICM CODES 420/430/450/455**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Functional Adequacy	The room configuration and arrangement of equipment satisfy storage, study, and processing requirements.	No drop down
2. Room Finishes	Floors shall be covered in an appropriate, easily cleaned material that will permit the room to be maintained in a neat and orderly condition. Walls and ceilings shall be finished in appropriate, easily cleaned materials. Color schemes and finish materials shall present a pleasing appearance conducive to study.	<input type="checkbox"/> Renovated within past 5 years <input type="checkbox"/> Upgrade within 5 years <input type="checkbox"/> Poor
3. Acoustics and Sound Control	Floor covering, wall surface, and ceiling materials shall have appropriate sound absorption and reflective qualities; and insulation against outside noise shall be provided sufficient to provide a study environment free of distracting noise levels.	<input type="checkbox"/> Excellent / Appropriate <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
4. Climate Control	Heating and cooling systems, together with adequate control systems, shall be installed that will permit the maintenance of a comfortable study environment at all seasons of the year. The environmental control system shall be capable of maintaining the temperature, humidity, and air quality required for the proper preservation of library materials.	<input type="checkbox"/> Good <input type="checkbox"/> Limited control <input type="checkbox"/> Inadequate control
5. Lighting	The installed lighting system shall provide an adequate quality and level of lighting for study, and shall be provided with controls to vary or adjust the lighting level as required for specific needs.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
6. Electrical Services	Electrical capacity and adequate outlets shall be provided to meet the needs of study space equipment and student computers and ancillary equipment.	<input type="checkbox"/> Good <input type="checkbox"/> Limited <input type="checkbox"/> Poor
7. Information Technology	Open stack study rooms shall have appropriate connectivity to campus data networks and the Internet. Full access to library catalogs shall be provided.	<input type="checkbox"/> Good <input type="checkbox"/> Limited <input type="checkbox"/> Poor

APPENDIX II TABLES—TEACHING AND RESEARCH LABORATORIES

APPENDIX TABLE II-A CLASS AND OPEN LABORATORIES—GENERAL CRITERIA FICM CODES 210/215/220/225		
Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Structure	Building structure shall provide adequate floor load capacity for laboratory equipment, and a vibration-resistant environment for sensitive laboratory equipment, when needed.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
2. Functional Adequacy	Room configuration and the size and arrangement of student and instructional or research stations satisfy program requirements, and provide adequate sight lines. Adequate space is provided for such requirements as: <ul style="list-style-type: none"> • Group working areas • Laboratory set-up and clean-up • Demonstration • General support • Supply and equipment storage at each work station and for the laboratory 	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating – modernization, C – Extensive modernization <input type="checkbox"/> 210 - [teaching labs, computer labs, trading floor, drafting rooms, band rooms, choral rooms, music practice rooms, language labs, studios, theater stage areas for instruction, health labs etc.] <input type="checkbox"/> 215 – projection rooms, telecom control booths, coat rooms, prep rooms, material storage, hazmat storage, stock rooms, darkrooms, equipment rooms etc. <input type="checkbox"/> 220 – 225 [more limited than 210/215] <input type="checkbox"/> Confirm size and square footage <input type="checkbox"/> Confirm how programmatic elements are met <input type="checkbox"/> Storage <input type="checkbox"/> Utilization <input type="checkbox"/> Adaptability <input type="checkbox"/> Flat floor, tiered, sloped <input type="checkbox"/> Ceiling height <input type="checkbox"/> Classroom waiting area
3. Room Finishes	Floors shall be covered in an appropriate, easily cleaned material that will permit the room to be maintained in a neat and orderly condition. Walls and ceilings shall be finished in appropriate, easily cleaned materials. Color schemes and finish materials shall present a pleasing appearance conducive to teaching and learning.	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Floor <input type="checkbox"/> Walls <input type="checkbox"/> Ceiling
4. Acoustics and Sound Control	Floor covering, wall surface, and ceiling materials shall have appropriate sound absorption and reflective qualities; and insulation against outside noise shall be sufficient to provide a teaching and learning environment free of distracting noise levels.	<input type="checkbox"/> Programmatic suitability
5. Climate Control	HVAC systems, together with adequate control systems, shall provide a comfortable teaching and learning environment at all seasons of the year.	<input type="checkbox"/> Heating and cooling <input type="checkbox"/> NRC Rating

**APPENDIX TABLE II-A CLASS AND OPEN LABORATORIES—GENERAL CRITERIA
FICM CODES 210/215/220/225**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
6. Lighting	The installed lighting system shall provide an adequate quality and level of both task and general lighting for the teaching and learning environment, and shall be provided with controls to vary or adjust the lighting level as required for specific needs. Appropriate window coverings shall be provided to permit unimpaired use of audio-visual or other teaching equipment.	<input type="checkbox"/> Sun control <input type="checkbox"/> Blackout control <input type="checkbox"/> Dimming and switching of fixtures
7. Instructional Support	As required, laboratories shall be equipped to support instruction, with: <ul style="list-style-type: none"> • Connectivity to campus data networks and the Internet. • Chalkboards, whiteboards, projection screens, demonstration benches, and other teaching accessories • A full range of audio-visual equipment 	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> To be evaluated by room program requirements
9. Safety and Security	Teaching laboratories shall be equipped with fire detection and suppression systems appropriate to the laboratory function. Adequate compartmentalization shall be provided to limit fire damage risk. Appropriate access control shall be provided.	<input type="checkbox"/> Storage of chemicals and equipment [see10] <input type="checkbox"/> MEP Systems <input type="checkbox"/> Egress <input type="checkbox"/> Controlled access <input type="checkbox"/> Ventilation – special safety –eye wash – first aid etc.
10. Storage Rooms	Adequate locked storage spaces for supplies and equipment shall be provided convenient to laboratories and fully compliant with all safety codes and standards for all materials and equipment stored in the facility.	<input type="checkbox"/> Ventilation and rated enclosures

**APPENDIX TABLE II-B—DRY LABORATORIES—ADDITIONAL CRITERIA
FICM CODE 210/215/250/255**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Ventilation	Heating, ventilating and air conditioning (HVAC) systems should provide ample capacity to overcome heat load from computers and other laboratory equipment, and assure a well-ventilated and safe laboratory environment.	<input type="checkbox"/> HVAC <input type="checkbox"/> Chilled Beams <input type="checkbox"/> Supply and Exhaust <input type="checkbox"/> Raised Floor
2. Electric power	Electrical power system features should include: <ul style="list-style-type: none"> • Adequate capacity for current needs and future load growth • Multiple voltages and outlets, as required, to support laboratory equipment • Individual distribution to each laboratory • Uninterruptible power supply (clean power), if/as required 	<input type="checkbox"/> Back up power – Emergency Power <input type="checkbox"/> Normal power <input type="checkbox"/> Clean power <input type="checkbox"/> Uninterruptible <input type="checkbox"/> Standby <input type="checkbox"/> Lighting [general] <input type="checkbox"/> Special lighting <input type="checkbox"/> Data-Telecom <input type="checkbox"/> Public address <input type="checkbox"/> Cable TV
3. Specialized Utilities Services	Other specialized utilities services, are available, as required, to provide: <ul style="list-style-type: none"> • Gas • Vacuum • Compressed air • Dry waste disposal 	<input type="checkbox"/> Compressed air <input type="checkbox"/> Gas <input type="checkbox"/> Waste <input type="checkbox"/> Recycling <input type="checkbox"/> Other
5. Security and Safety	Detection and remote annunciation systems are provided, as required, for: <ul style="list-style-type: none"> • Smoke detection • Gas monitoring Fireproof data storage cabinets or rooms shall be provided as required.	<input type="checkbox"/> Door access control <input type="checkbox"/> Intrusion Alarm <input type="checkbox"/> Detection systems <input type="checkbox"/> Eye Wash
6. Installed Equipment and Furnishings	Student work stations shall include: <ul style="list-style-type: none"> • Fully equipped laboratory table or bench space at each workstation. • Desk space for report-writing separate from workbenches. • Adequate storage space. 	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Special equipment
7. Support Facilities	Adjacent support rooms or facilities should be available, if/as required, for: <ul style="list-style-type: none"> • Preparation rooms • Clean rooms • Major specialized equipment 	<input type="checkbox"/> Prep rooms <input type="checkbox"/> Clean rooms <input type="checkbox"/> Special equipment rooms
8. Storage		<input type="checkbox"/> Clean Storage <input type="checkbox"/> Controlled / Secure storage <input type="checkbox"/> Waste storage

**APPENDIX TABLE II-C—WET LABORATORIES—ADDITIONAL CRITERIA
FICM CODES 210/215/250/255**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Ventilation	Heating, ventilating and air conditioning (HVAC) systems should assure a well-ventilated and safe laboratory environment. Specific features should include: <ul style="list-style-type: none"> • Properly filtered ventilation systems capable of meeting established air-change and 100% fresh air make-up requirements • Enclosed and properly exhausted fume hoods as required • Adequate supply and exhaust capacity to meet present needs and future growth • Separate ducting for hoods and exhaust fans. In some teaching laboratories, properly manifolded fume hoods may be satisfactory • Separation of supply and exhaust air locations • Appropriate air balance between class laboratories (negative pressure) and adjacent hallways and public spaces (positive pressure) • Energy-saving control systems • HEPA-filtered laminar flow safety cabinets as required for biological laboratory tissue culture or containment work 	<ul style="list-style-type: none"> ___ Distribution ___ Chilled Beams ___ Supply and Exhaust ___ Raised Floor ___ NRC rating ___ Air change requirements ___ Filtration ___ Balancing ___ Pos/Neg pressure
2. Electric Power	Electrical power system features should include: <ul style="list-style-type: none"> • Adequate capacity for current needs and future load growth • Multiple voltages and outlets, as required, to support laboratory equipment • Individual distribution to each laboratory • Uninterruptible power supply (clean power), if/where required. 	<ul style="list-style-type: none"> ___ Back up power – Emergency Power ___ Normal power ___ Clean power ___ Uninterruptible ___ Standby ___ Lighting [general] ___ Special lighting ___ Data-Telcom-Cable TV ___ Public address
3. Plumbing	Plumbing systems shall provide: <ul style="list-style-type: none"> • Corrosion resistant sinks at each work station, as required • Glass-lined/other corrosion resistant drainage piping of adequate capacity • Water supply of adequate capacity to every work station • Distilled or de-ionized water, as required 	<ul style="list-style-type: none"> ___ Potable HW/CW ___ Tempered water ___ Steam ___ Wall mounted HW/CW & Rack ___ NPW Process ___ RO/D base PW ___ Process DWV/Treat ___ Domestic W&V ___ Lab W&V LS/CS

APPENDIX TABLE II-C—WET LABORATORIES—ADDITIONAL CRITERIA
FICM CODES 210/215/250/255

Space Characteristic	Space Functionality Criteria	Evaluation Notes
4. Specialized Utilities Services	Other specialized utilities services, should be available, as required, to provide: <ul style="list-style-type: none"> • Gas • Vacuum • Compressed air • Dry waste disposal 	<input type="checkbox"/> Lab compressed air <input type="checkbox"/> Motive CA <input type="checkbox"/> Lab CA 7 polish <input type="checkbox"/> Piped nitrogen <input type="checkbox"/> Bottled gas [list] <input type="checkbox"/> Lab 22" VAC <input type="checkbox"/> Hi-VAC <input type="checkbox"/> Lab W&V <input type="checkbox"/> Cleaning VAC <input type="checkbox"/> Instrument water – zero air
5. Security and Safety	Security and safety features should include: <ul style="list-style-type: none"> • Eyewash and safety showers as provided by ANSI standards • Ventilation failure alarms with remote annunciation for smoke detection and gas monitoring • Emergency power for laboratory exhaust and other safety systems • Equipment and monitoring alarms with remote annunciation • Fireproof data storage cabinets or rooms if/as required 	<input type="checkbox"/> Eye Wash <input type="checkbox"/> Alarms <input type="checkbox"/> Emergency power <input type="checkbox"/> Equipment monitoring <input type="checkbox"/> Haz Mat storage <input type="checkbox"/> Gas storage
6. Installed Equipment and Furnishings	Student work stations shall include: <ul style="list-style-type: none"> • Fully equipped laboratory table or bench space at each work station • Corrosion resistant work surfaces • Desk space for report writing separate from work benches 	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Benchwork <input type="checkbox"/> Desk space <input type="checkbox"/> Special lab space <input type="checkbox"/> Special research arrangements
7. Support Facilities	Adjacent support rooms or facilities should be available for specialized support facilities, as required by programs. These may include: <ul style="list-style-type: none"> • Preparation rooms • Clean rooms • Cold rooms • Warm rooms • Major equipment, e.g., autoclaves, centrifuges, furnaces, etc. 	<input type="checkbox"/> Required level of renovation A – modest restoration, B – Major updating/modernization, C – Extensive modernization <input type="checkbox"/> Prep rooms <input type="checkbox"/> Clean rooms <input type="checkbox"/> Cold rooms <input type="checkbox"/> Warm rooms <input type="checkbox"/> Equipment rooms
8. Storage	Secure workstation and general storage spaces, fully compliant with all safety codes and standards, shall be provided for all chemicals, materials, and equipment employed in the laboratory. Temperature-controlled storage (cold rooms and heated storage) shall be provided as required for biology and biochemistry laboratories.	<input type="checkbox"/> General storage <input type="checkbox"/> Hazardous storage <input type="checkbox"/> Waste

APPENDIX TABLE II-D—COMPUTER LABORATORIES—ADDITIONAL CRITERIA
FICM CODES 210/215 AND 220/225

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Installed Equipment and Furnishings	Key features include: <ul style="list-style-type: none"> • Desk or work table space for each student station • Instructor station w/ large screen projection, blackboard, etc. • Stations for printers, scanners, and plotters 	No drop down
2. Electric Power	Electric power system shall provide: <ul style="list-style-type: none"> • Adequate capacity for installed and student computing and ancillary equipment, with capacity for load growth • An uninterrupted power supply (UPS) 	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
3. Lighting	Lighting shall be designed to avoid glare and provide relief from screen.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
4. Acoustics and Sound Control	Carpeting and an acoustical ceiling shall be provided to avoid noise distraction.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
5. Information Technology	A wireless environment, or each computer station shall be provided with power source and networking	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor

APPENDIX TABLE II-E—STUDIO LABORATORIES—ADDITIONAL CRITERIA
FICM CODES 210/215/220/225

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Room Configuration	Room size and configuration shall satisfy the special height, clearance, or other requirements for painting, sculpture, design, scenery building, or other specific studio use.	No drop down
2. Lighting	Lighting intensity and quality shall satisfy the needs of architectural design, art, or other specific studio use.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
3. Sound Control	Music studios shall be adequately sound-proofed to prevent interference with performance or listening.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor
4. Storage	Adequate storage is available for such related requirements as scenery or art works.	<input type="checkbox"/> Good <input type="checkbox"/> Adequate <input type="checkbox"/> Poor

**APPENDIX TABLE II-F—RESEARCH LABORATORIES—ADDITIONAL CRITERIA
FICM CODES 250/255**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Program Adequacy	Laboratory space and configuration should provide for: <ul style="list-style-type: none"> <input type="checkbox"/> Physical separation of offices and laboratories <input type="checkbox"/> Flexible, modular design with movable wall, bench and casework systems <input type="checkbox"/> Adequate office and support space for research staff and graduate students 	No drop down
2. Utilities System	Utilities systems should be of a flexible, modular design in shafts, interstitial spaces, or chases that readily permit modification to serve changing research program requirements	_____ Good _____ Adequate _____ Poor

**APPENDIX TABLE II-G—ANIMAL QUARTERS
FICM CODES 570/575**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Program Adequacy	Animal quarters or holding facilities shall be fully compliant with all current National Institute for Health requirements for these facilities. Key features include: <ul style="list-style-type: none"> • Seamless, washable ceilings, walls, and floors • Ventilation with 100% fresh air make-up, with a minimum 12 air changes/hour and a low filtered exhaust • High level of security 	___ Good ___ Adequate ___ Poor Note: For animal holding facilities, there also may be an integrated “Capacity” question—quantity of animals that can be accommodated.

**APPENDIX TABLE II-H—HAZARDOUS MATERIAL
FICM CODES 760/765**

Space Characteristic	Space Functionality Criteria	Evaluation Notes
1.Storage	Storage spaces shall be fully compliant with all safety codes and standards for all chemicals and materials stored in the facility. Key characteristics include these: <ul style="list-style-type: none"> • Totally exhausted ventilation with 12 air changes/hour and floor exhaust • Adequate capacity for separation of chemicals by category or hazard <input type="checkbox"/> Tip-resistant storage cabinets and shelving <input type="checkbox"/> Explosion-proof electrical fixtures <input type="checkbox"/> Seamless, washable wall and ceiling finishes <input type="checkbox"/> Fire suppression system <input type="checkbox"/> Curbing 	___ Good ___ Adequate ___ Poor

APPENDIX III TABLE—SUPPORT SERVICES FACILITIES

APPENDIX III-A—SUPPORT SERVICES		
FICM CODES 720/725, 730/735, 740,745, 750/755/760/765		
Space Characteristic	Space Functionality Criteria	Evaluation Notes
1. Program Adequacy	<p>Facilities of adequate size and quality are available for all required campus support activities. These may include facilities for:</p> <ul style="list-style-type: none"> • Central Shops (720/725) • Central Storage (730/735) • Vehicle Service and Storage (740/745) • Central Printing and Duplicating (750/755) • Central Mail Services (750/755) • Central Shipping and Receiving (750/755) • Campus police (750/755) 	<p>List by sub-code</p> <p>___ Good</p> <p>___ Adequate</p> <p>___ Poor</p> <p>(Requires extensive discussion with Facilities Management personnel in User Group Interview)</p>