

University of North Carolina at Charlotte

New Undergraduate

Course and Curriculum Proposal from: The Department of Kinesiology

Proposal Number: KNES 4-8-2011 R

Title: Establishment of a Major in Neurodiagnostics and Sleep Science

Proposal Summary and Catalog Copy

1. Summary. The Department of Kinesiology proposes to add nine new courses to the undergraduate curriculum for a B.S. degree completion program in Neurodiagnostics and Sleep Science (NDSS): NDSS 3101, NDSS 3102, NDSS 3104, NDSS 3405, NDSS 4101, NDSS 4104, NDSS 4105, NDSS 4406, and NDSS 4107. These courses are required for the major. The Department of Kinesiology also proposes to add three courses to the NDSS program that already exist on campus. Two of these courses already exist in the undergraduate Respiratory Therapy curriculum and will be used in the new NDSS program. They include: RESP 4102 and RESP 4103. The NURN 4201 is already being taught by the School of Nursing and it is currently being used in the Respiratory Therapy program as well. The NDSS program will use the NURN 4201 class as well.
2. Proposed Catalog Copy. The following represents full copy of the courses represented in this proposal. They include:

**NDSS 3101 Pathophysiology of Sleep, Neurological, and Related Disorders (3)**

Course Description: Students will learn about diseases affecting the nervous system, the sleep/wake cycle, and psychiatric and behavioral disorders. Topics include etiology, clinical manifestations, pharmacology, disease prevention, and overview of treatments. Prerequisite: Admittance into NDSS program. *Fall/Online*

**NDSS 3102 – Neurological and Sleep Diagnostic and Therapeutic Methods, and Monitoring Services (3)**

Course Description: Students will learn about services available at sleep and neurophysiology laboratories and interpretation of diagnostic findings. Topics include sleep procedures, electroencephalography, and intracranial/long-term epilepsy monitoring. Students participate in laboratory practice sessions. Prerequisite: Admittance into NDSS program. *Fall/Online*

**NDSS 3104 – Advanced Sleep and Neurodiagnostic Clinical Procedures (3)**

Course Description: Students will learn advanced procedures performed in sleep centers and neurophysiology laboratories. Topics include nerve conduction velocities, electronystagmography, actigraphy, and autonomic testing techniques. Students participate in laboratory practice sessions. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3101 and NDSS 3102. *Spring/Online*

**NDSS 3405 – Practicum (3)**

Course Description: Sleep disorders center and clinical neurophysiology laboratory clinical experience. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3104. *Summer*

**NDSS 4101 – Principles and Practice of Healthcare Education (3)**

Course Description: This course provides a foundation in the principles and practice of healthcare education. Topics include the educational process, learner characteristics, and teaching and learning theories, techniques and strategies. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3101. *Fall/Online*

**NDSS 4104 – Advanced Physiological Monitoring and Data Acquisition (3)**

Course Description: Students will learn advanced clinical procedures performed in clinical neurophysiology laboratories and operating rooms. Topics include evoked potentials and intraoperative neurophysiologic monitoring. Students participate in laboratory practice sessions. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3104. *Fall/Online*

**NDSS 4105 – Leadership in Healthcare Organizations (3)**

Course Description: This course focuses on the theories and practices of leadership in health care. Global, social, legal, political, economic, and ethical issues are explored. Prerequisite: Admittance into NDSS program and a grade of C or higher in RESP 4102 and NDSS 4101. *Spring/Online*

**NDSS 4406 – Internship (3)**

Course Description: Sleep and clinical neurophysiology laboratory educational/management internship with mentoring component. Prerequisite: Admittance into the NDSS program and completion of NDSS 4101 and RESP 4102 with a grade of C or better. *Spring*

**NDSS 4107 – Sleep and Neurodiagnostic Sciences Capstone (6) (W)**

Course Description: Students complete a project and presentation culminating from the undergraduate course of study. Project topics provide students the opportunity to summarize, evaluate, and integrate knowledge

gained throughout the undergraduate major. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3405, NDSS 4104, NURN 4201, and NDSS 4105. *Spring*

### Justification

1. Identify the need addressed by the proposal and explain how the proposed action meets the need.

The Department of Kinesiology in the College of Health and Human Services at the University of North Carolina at Charlotte, in collaboration with the Departments of Allied Health Sciences and Neurology in the School of Medicine at the University of North Carolina at Chapel Hill, are proposing a post-professional baccalaureate degree program in neurodiagnostics and sleep science (NDSS). Potential students for this program are Sleep Technologists and Electroneurodiagnostic Technologists who are already registered and practicing, but who want to pursue a BS degree to expand their professional knowledge and expand opportunities for career advancement. The NDSS program will provide a broad based foundation for sleep science professionals to gain vital skills of critical thinking and creative problem solving needed for key leadership, educational, and management roles in this emerging discipline. We anticipate that the program's prospective students will be motivated and qualified practitioners who want to pursue this degree to become the institutional, educational, and health care leaders needed in this field. The proposed program will be the first of its type in the nation and will set the national standard for future BS degrees in NDSS.

To assess the demand for the new baccalaureate degree program in NDSS, students enrolled in the five community college programs in NC with a concentration in polysomnography and/or electroneurodiagnostic technology were surveyed in 2008. Eighty two percent of the students surveyed indicated that they were interested in pursuing a BS degree in neurodiagnostics and sleep science. Students enrolled in the 33 CAAHEP accredited polysomnography and electroneurodiagnostic technology programs in the US were also surveyed and 65 percent of the respondents were interested in pursuing a BS degree in neurodiagnostics and sleep science.

Program directors from the NC Community College Polysomnography and Electroneurodiagnostic Technology with Add-on Polysomnography programs stated their students and graduates are interested in a BS degree in Neurodiagnostics and Sleep Science.

To meet the leadership, educational, and management needs for neurodiagnostic and sleep science practice in North Carolina, NDSS graduates will:

- Be prepared to work in electrophysiological fields (laboratories, hospitals, industry, colleges)
- Problem solve individually and in teams addressing unique issues arising in the health care arena involving the overlap of electrophysiology, laboratory science, management and education
- Be prepared to teach at the community college level in electrophysiological areas
- Create and promote policy that improves cost-effective quality practices
- Be well prepared for additional advanced degrees.

2. Discuss prerequisites/corequisites for course(s) including class-standing.

Students must first complete an associate degree from an accredited school. Upon successful completion of their associate degree, all students must have earned their registry by the Board of Registration of Polysomnographic Technologists (BRPT) and/or the American Board of Electroencephalographic and Evoked Potential Technologists (ABRET). All NDSS courses are will be limited to students who are formally accepted into the program. The NDSS program is cohort based and admits new students each fall semester. Courses will be taught in the following sequence:

<b>First Year / Semester</b>	<b>Course</b>
Fall	NDSS 3101 - Pathophysiology of Sleep, Neurological, and Related Disorders
	NDSS 3102 - Neurological and Sleep Diagnostic and Therapeutic Methods, and Monitoring Services
	RESP 4103 – Evidence-Based Practice
Spring	NDSS 3104 - Advanced Sleep and Neurodiagnostic Clinical Procedures
	NURN 4201 - Information Technology: Applications in Health Care
Summer I or II	NDSS 3405 - Practicum

<b>Second Year / Semester</b>	<b>Course</b>
Fall	NDSS 4101 - Principles and Practice of Healthcare Education
	RESP 4102 - Program Administration

	NDSS 4104 - Advanced Physiological Monitoring and Data Acquisition
Spring	NDSS 4105 - Leadership in Healthcare Organizations
	NDSS 4406 - Internship
	NDSS 4107 - Sleep and Neurodiagnostic Sciences Capstone

3000 level courses indicate junior level courses and 4000 level courses indicate senior level courses. Students are advised to enroll in courses according to the sequence above. The specific prerequisites identified for some of the courses are identified above in the course descriptions. The NDSS curriculum is 38 hours in length and can be completed within two years based on sequence shown above.

3. Demonstrate that course numbering is consistent with the level of academic advancement of students for whom it is intended.

The upper division courses are numbered to reflect the year of their class standing. Thus 3000 level courses reflect junior standing, while 4000 level courses reflect senior standing. The courses are also numbered sequentially in the order that they need to be taken, with the exception of courses that are cross-listed. The course sequence above was determined by consulting with an advisory committee of physicians, program directors of sleep and neurodiagnostic associate degree programs, and laboratory managers. Courses are in the order in which the committee specified is the order most relevant to real-world practice.

4. In general, how will this proposal improve the scope, quality and/or efficiency of programs and/or instruction?

This new proposed degree is a specialized program in allied health care utilizing both an interdisciplinary and multidisciplinary approach within the College of Health and Human Services and throughout the University of North Carolina at Charlotte. This program will complement the existing portfolio of degree programs in applied health areas, including: public health, nursing, athletic training, exercise science, respiratory therapy, and social work. The degree program would be administratively housed in the Department of Kinesiology. The focus of the proposed curriculum content is also consistent with the Department's expertise on cardiopulmonary systems and function. The new program will utilize three courses that are already being taught in existing programs in the College, as well as common use of the University's General Education courses. The nine new proposed courses are specific to the neurodiagnostics and sleep science discipline, and compliment the Department's current upper division offerings at the 3000 & 4000 level.

Impact

1. What group(s) of students will be served by this proposal? (Undergraduate and/or graduate; majors and/or non-majors, others? Explain). Describe how you determine which students will be served.

Undergraduate students will be served by this proposal. Potential students for this program are Sleep Technologists and Electroneurodiagnostic Technologists who are already registered and practicing, but who want to pursue a BS degree to expand their professional knowledge and expand opportunities for career advancement. Potential students will already hold an associate degree. Surveys completed by program directors and students of Sleep and Neurodiagnostic Technology AAS programs at the North Carolina Community College as well as surveys completed by managers of sleep and neurodiagnostic laboratories throughout North Carolina demonstrate a need for a baccalaureate degree in NDSS. These surveys are the basis in determining which students will be served.

The degree program will serve students who have already obtained an associate degree, and who are appropriately credentialed to practice as a polysomnographic and/or neurodiagnostic technologist. Prospective students will need to provide verification of their credentials in order to gain acceptance into the program. This curriculum will serve students who have been specifically admitted as an undergraduate NDSS major. Furthermore, this curriculum will provide polysomnographic and neurodiagnostic technologists with advanced and specialized skills, including management and patient education skills. These advanced and specialized skills prepare polysomnographic and neurodiagnostic technologists to assume professional roles in a variety of health care settings including acute care hospitals, long-term acute care hospitals, pharmaceutical companies, outpatient centers, and physician offices. Additionally, baccalaureate prepared polysomnographic and neurodiagnostic technologists can address faculty needs to prepare entry-level practitioners in North Carolina's community college-based polysomnography and electroneurodiagnostic technology programs.

2. What effect will this proposal have on existing courses and curricula?
  - a. When and how often will added course(s) be taught?

These courses proposed above in the Proposal Summary above will only be taught during the semester that they have been identified to do so. Thus each course will be taught once per year, either during the Fall, Spring or Summer term.

- b. How will the content and/or frequency of offering of other courses be affected?

The content and frequency of the other three courses that currently exist at UNC Charlotte (these courses make up the rest of the courses needed for the degree program) will not be affected in any way. The course sequencing for the NDSS degree program has been developed so that other courses will not be affected.

- c. What is the anticipated enrollment in course(s) added (for credit and auditors)?

It is anticipated that enrollment in each of the courses proposed will encompass approximately 30 part-time students. As word of the new program increases, it is expected that more students will enroll in these courses. This enrollment estimate is conservative, and it is expected that all students enrolled in the courses will take them for credit.

- d. How will enrollment in other courses be affected? How did you determine this?

Enrollment in the other three courses will also increase as a result of the creation of this degree program. The Director of the School of Nursing has indicated her support for the NDSS students taking NURN 4201 (see attached email) and the Respiratory Therapy Interim Program Coordinator has also expressed support for NDSS students taking RESP 4102 and RESP 4103 courses in their program (please see attached). Overall, each of the individuals have been fully consulted regarding these anticipated enrollment increases and has given unequivocal support for the development of this program (see attached support documents).

- e. If course(s) has been offered previously under special topics numbers, give details of experience including number of times taught and enrollment figures.

None of the course contained in this proposal have ever been offered as a special topics class. Moreover, none of the other three courses that previously exist that complete the proposed NDSS degree program have been previously taught under a special topics number.

- f. Identify other areas of catalog copy that would be affected, e.g., curriculum outlines, requirements for the degree, etc.

Currently, no other area of the catalog copy will be affected by this proposal since this is a new degree program proposal.

## Resources Required to Support Proposal

### 1. Personnel

- a. Specify requirements for new faculty, part-time teaching, student assistant and/or increased load on present faculty.

The contents of this proposal will not place any additional workload requirements on current faculty within the Department of Kinesiology. Due to the collaborative nature of course content, the Department of Kinesiology will utilize a faculty member supplied by UNC Chapel Hill's School of Medicine. This faculty member is already in place. Funding for this faculty member is currently provided by UNC Chapel Hill.

We anticipate that we may need one part time faculty member by 2013 to help teach NDSS courses, and to coordinate the administrative and clinical components of the program. Lastly, there will be no need for student assistance for this program.

- b. List by name qualified faculty members interested in teaching the course(s).

Mary Ellen Wells, MS, RPSGT, R.EEG T, R.NCS T.  
Clinical Assistant Professor  
Department of Allied Health Sciences  
UNC School of Medicine  
The University of North Carolina at Chapel Hill, CB #7120  
Chapel Hill, NC 27599  
919-843-4673  
[mwells@med.unc.edu](mailto:mwells@med.unc.edu)

### 2. Physical Facility

The NDSS program will be housed in Belk Gymnasium within the Department of Kinesiology. The academic space within Belk Gymnasium includes: office spaces, extensive research laboratories, an athletic training clinical instructional laboratory, and 5 classrooms.

The web-based courses require minimal classroom support. Video and teleconferencing activities will utilize the Video Conferencing Center located within the UNC Hospitals Clinical Neurophysiology Laboratory.

Course presentations will take place in Bondurant Hall and the space will be scheduled through the Medical School Teaching Laboratories (MSTL).

Limited laboratory instruction will take place in the UNC Hospitals



Clinical Neurophysiology Department and Sleep Disorders Center.

3. Equipment and Supplies

All of the 5 classrooms in Belk Gymnasium are equipped with recently updated “smart technology”. Each of these rooms contains all necessary A/V and computer equipment to aid in electronic instruction. If additional space is needed, the faculty in the NDSS program will have access to the College of Health & Human Services building. This 161,000 ft<sup>2</sup> facility contains 4 floors of offices, over 40 classrooms, four Skills Laboratories, 10 Conference Rooms, one Computer laboratory and 3 Computer classrooms. All classrooms, conference rooms and laboratories are equipped with mounted LCD projectors, instructor computers, DVD, VCR, and control system for greater ease of use. In the future, some of the classrooms will be able to offer asynchronous learning opportunities. All of the instructional equipment housed in these classrooms is supported locally through the Office of Health Informatics in the College, as well as through central Information Technology Services on campus.

4. Computer

Specify requirements for computer usage by students and/or faculty, and include an assessment of the adequacy of computing resources by Computing Services.

Faculty will not need any additional equipment for computer usage above and beyond what is provided for them when they are hired. Additionally, all students enrolled in the NDSS program will have full access to the brand new state of the art computer lab located in the College of Health & Human Services building. This lab is equipped with nearly 125 PC workstations. Also, as previously mentioned, each of the classrooms are equipped with recent PCs to support multimedia instruction.

5. Audio-Visual

Specify requirements for audio and/or visual equipment and media production services from Media Services.

There are no additional specific needs for A/V support from Media Services for this program. All of the A/V needs for the program can be handled through the equipment that currently exists in the Department and in the College.

6. Other Resources

Specify and estimate cost of other new/added resources required, e.g., travel, communication, printing and binding.

Additional resources will be needed in the areas of travel,

telecommunications, and printing / copying. The UNC Chapel Hill School of Medicine has agreed to supply \$15,000 each year to cover these costs until the program is self-sustaining.

7. Indicate source(s) of funding for new/additional resources required to support this proposal.

Financial support is available through appropriated State funds, and funds (or goods) donated by individuals, corporations, or foundations. UNC Chapel Hill is the primary source of new resources for this program, including faculty and delivery of specialized Web based course content. There also is the possibility of receiving funding through grant writing to fund educational, research, or service activities.

#### Consultation with the Library and Other Departments or Units

1. Library Consultation

Indicate written consultation with the Library Reference Staff at the departmental level to insure that library holdings are adequate to support the proposal prior to its leaving the department. (Attach copy of ***Consultation on Library Holdings***).

Due the collaborative nature of this curriculum, the NDSS program will utilize the libraries of both the UNC Charlotte and the UNC Chapel Hill campuses. Adequacy of each is described below:

##### UNC Charlotte library holdings

The Chair of the Department of Kinesiology (Dr. Mitch Cordova) has communicated with Ms. Jean Hiebert Health & Human Services Librarian from Atkins Library regarding what holdings the library currently has that will support the proposed curriculum. In summary, the library appears to have adequate holdings (textbooks and journals) to initially begin this program. The library is committed to obtaining pertinent textbooks related specifically to Neurodiagnostics and Sleep Science in time for Fall 2011. Moreover, as the program continues to grow over time, the appropriate requests will be made to the library to support the program's needs.

##### UNC Chapel Hill library holdings

The Library currently supports the Sleep Medicine Division in the School of Medicine's Department of Neurology and the UNC Sleep Disorders Center, accredited as a full service sleep center. Existing library collections hold several hundred subject-specific books, and more than twenty journal subscriptions are already available to support both new and existing sleep

and neurodiagnostic programs.

An analysis of current collection strength reveals that the library has electronic subscriptions or access to all but one of the most needed journals and to approximately half of the core texts required for the new program, as designated by program faculty member Mary Ellen Wells. A list of current holdings provided by the UNC Chapel Hill Health Science Library is included as an attachment.

The Library supports other distance education programs in four of the five schools associated with it, including three other programs in the Department of Allied Health. General resource support is provided by a large and expanding collection of electronic journals, books, databases, and other resources available online on and off campus. More than 200 databases are available, of which PubMed, CINAHL, CogPrints, and PsycINFO are central to the new program.

2. Consultation with other departments or units  
List departments/units consulted in writing and dates consulted.  
Summarize results of consultation and attach correspondence.

Multiple letters of support for the NDSS program (and hence the development of this curriculum) have been received from key institutions throughout North Carolina. Specifically, the following are full support of this proposed curriculum and program:

- North Carolina Community College System (June 3<sup>rd</sup>, 2010)
- Pitt Community College (January 5<sup>th</sup>, 2009)
- Lenoir Community College (September 17<sup>th</sup>, 2008)
- Pamlico Community College (October 8<sup>th</sup>, 2008)
- Sandhills Community College (October 8<sup>th</sup>, 2008)
- The American Society of Electroneurodiagnostic Technologists (November 1<sup>st</sup>, 2008)
- UNC Chapel Hill Department of Neurology (October 7<sup>th</sup>, 2008)
- Council for Allied Health in North Carolina (November 18<sup>th</sup>, 2008)
- North Carolina Association of Sleep Technologists (October 28<sup>th</sup>, 2008)
- UNC Clinical Neurophysiology Labs and Sleep Disorders Center (May 26<sup>th</sup>, 2010)

### Initiation and Consideration of the Proposal

1. Originating Unit  
Briefly summarize action on the proposal in the originating unit including

information on voting and dissenting options.

The proposal was first created and reviewed by select faculty in the Department of Kinesiology. The Department faculty has unanimously endorsed the establishment of this program. The proposed program will be forwarded to the College of Health & Human Services Curriculum Committee (CCC) for approval.

2. Other Considering Units

Briefly summarize action on the proposal by each considering unit including information on voting and dissenting options.

The CCC will review and vote on the approval of the document. Once it passes the CCC with a vote, the proposal will then be forwarded on for approval at the University level.

Attachments

1. Memorandum of Understanding between UNC Charlotte and UNC Chapel Hill
2. Intent to Plan Approval from UNC Charlotte
3. Communication from Library Regarding Curriculum Support and specific NDSS library holdings
4. Letters of Support from Key Units on Campus and Professional Community Leaders
5. Representative Course Syllabi (complete with course outlines and required textbooks)

## Attachments

## **MEMORANDUM OF UNDERSTANDING**

### **BETWEEN**

**The University of North Carolina at Chapel Hill, School of Medicine, Department of Allied Health Sciences**

### **AND**

**The University of North Carolina at Charlotte, College of Health & Human Services, Department of Kinesiology**

#### **I. PURPOSE**

The purpose of this Memorandum of Understanding is to define the working relationship between The University of North Carolina at Chapel Hill, School of Medicine, Department of Allied Health Sciences (DAHS) and The University of North Carolina at Charlotte, College of Health & Human Services, Department of Kinesiology (CHHS). This agreement will clarify the collaborative roles and responsibilities of the two institutions with respect to the establishment and delivery of an on-line Bachelors Degree in Neurodiagnostics and Sleep Science (NDSS).

DAHS has developed a specialized curricular content for a new baccalaureate degree to prepare advanced practice professionals in the field of Neurodiagnostics and Sleep Science (NDSS). The need for this new degree and level of preparation has become apparent over the past several years and is well documented in an initial "Intent to Plan" proposal prepared by the DAHS faculty. Ideally, this content would be offered in the form of a primarily on-line, post-professional degree for currently registered sleep technologists and neurodiagnostic technologists who already have their AS or AAS degrees (preferably earned from one of the NC Community College END or PSG programs.) CHHS has been successful in designing and delivering a very parallel, post-professional baccalaureate degree for practicing respiratory care professionals in North Carolina.

Our mutual goal is to establish a collaborative partnership through which CHHS will sponsor this new degree and offer approximately four of the required upper division undergraduate courses. DAHS will deliver and be responsible for approximately eight of the specialized neurodiagnostics and sleep science courses. DAHS's responsibility includes course management, content evaluation, and course revision.

#### **II. LEGAL STATUS**

All of the provisions of this MOU and any addenda are subject to mutual agreement of the parties, to the availability of appropriate funding at each institution, to review by the Office of University Counsel and approval by the Provost at each participating campus, and to review and approval by the UNC General Administration. This MOU will remain in effect until terminated or amended by mutual consent. Both parties to this MOU have the right to terminate this MOU by informing the partner in writing six months prior to the desired termination date.

### III. TERM OF THIS MEMORANDUM

The effective date of this memorandum shall be the date of execution and it shall continue in effect until terminated by either party or modified by written amendment executed by both parties.

### IV. ROLES AND RESPONSIBILITIES

#### A. The DAHS will:

1. Provide CHHS with access to editable versions of documents prepared by their faculty that are needed for the establishment of a new NDSS degree program in the UNC system (i.e., *Intent to Plan* and *Request to Establish*).
2. Provide assistance if requested to faculty at CHHS in the final preparation and submission of these forms on behalf of UNC-Charlotte
3. Advertise and recruit students for this new degree program at UNC-Charlotte
4. Provide the full time services of a DAHS faculty member qualified in NDSS , Mary Ellen Wells (or should she be or become unavailable, of a substitute NDSS faculty member reasonably acceptable to CHHS), who will assume responsibility for overall program coordination, NDSS specialty course development and delivery, assisting with applicant screening , making admission recommendations, submitting student grades in a timely manner, and related teaching and program administrative duties as may be agreed through further addenda to this MOU.
5. Disseminate information about this collaborative degree program throughout the UNC system and the relevant professional community, and list the program on its own website, noting the contributions of each partner institution.
6. Submit needed documentation to allow students in the NDSS program to access needed specialty content through the UNC Chapel Hill Health Sciences Library
7. Provide access to the facility and faculty resources of the UNC Hospitals Sleep Disorders Center and UNC Clinical Neurophysiology Laboratory, including the services of the Medical Director of this program (Dr. Bradley Vaughn), as described in the curriculum plan for this degree.

B. The NDSS specialty courses will be cross listed at UNC- CH

C. DAHS will be responsible for the course material content and quality assurance for the specialty courses.

#### D. The CHHS will:

1. Submit the *Intent to Plan* and *Request to Establish* documents in accordance with the policies and timelines established for UNC-Charlotte and the UNC General Administration.
2. Assist with the process of securing approval and listing of new NDSS courses by the Registrar at UNC-Charlotte; and securing an appropriate adjunct or joint

appointment for Mary Ellen Wells (or substitute DAHS faculty member) at UNC-Charlotte.

3. Plan for the additional student slots needed in CHHS health science courses that will be required for completion of the NDSS degree program.
4. Provide the Information and Education Technology infrastructure and support needed for delivery of this on-line degree program.
5. Advertise this new collaborative degree program on its website and in other materials advertising related health science degree programs, identifying UNC-Chapel Hill as a partner in this offering, and noting the contributions of each partner institution.
6. Admit students accepted into this program; and confer the designated degree upon their successful completion of the program.
7. Track student credit hours projected and actually generated through this degree program, and request enrollment growth funding from the UNC General Administration for the ongoing support of the program

## **V. FINANCIAL CONSIDERATIONS**

There will be no exchange of funds between the participating institutions. The DAHS will contribute the time and expertise of its NDSS faculty member, Mary Ellen Wells, as in-kind support for this collaborative partnership during the initial degree start up period, which shall be until such time as enrollment growth funding for the CHHS will support this cost, but no later than 18 months from the date the Board of Governors approves UNC-Charlotte's Request to Establish this degree. After the Board of Governors approves the Establishment of this program, DAHS will provide funding for adjunct faculty needed to support expanded capacity of existing CHHS health science courses that will be required for students enrolled in the NDSS degree program. This funding will not exceed \$15,000 per academic year, and will continue until such time as enrollment growth funding for the CHHS will support this cost, but no later than 18 months from the date the Board of Governors approves UNC-Charlotte's Request to Establish this degree.

It is expected that the this program will generate new student credit hours sufficient to maintain the local program costs at CHHS; and to support a contractual arrangement with DAHS that will provide funding to support Ms. Wells' time commitment to the program. The specific terms of such an arrangement will be determined at a later date and documented in an addendum to this MOU or through a more formal, inter-institutional contract.

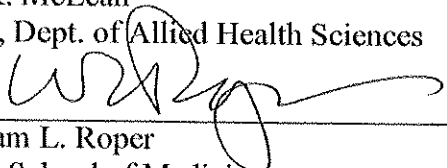


**VI. SIGNATURES**

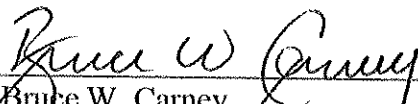
The University of North Carolina  
at Chapel Hill



Lee K. McLean  
Chair, Dept. of Allied Health Sciences

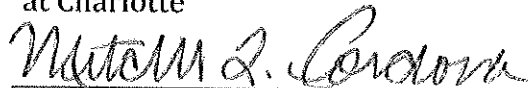


William L. Roper  
Dean, School of Medicine



Bruce W. Carney  
Executive Vice Chancellor and Provost

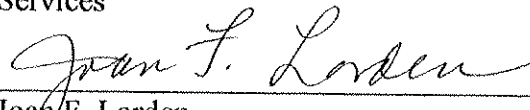
The University of North Carolina  
at Charlotte



Mitchell L. Cordova  
Chair, Dept. of Kinesiology



Jane B. Neese  
Interim Dean, College of Health & Human  
Services



Joan F. Lorden  
Provost and Vice Chancellor for Academic  
Affairs

## **Cordova, Mitch**

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**From:** Zenk, Leslie  
**Sent:** Wednesday, April 06, 2011 3:24 PM  
**To:** Cordova, Mitch  
**Cc:** Coppola, Steve  
**Subject:** RE: NDSS Program Intent to Plan Documentation

Mitch –

Appendix A and Appendix F have been signed by the Provost and have been submitted electronically to General Administration.

- Leslie

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**Leslie R. Zenk | Coordinator of Academic Policies, Procedures, and Faculty Governance**  
UNC Charlotte | Office of Academic Affairs  
9201 University City Blvd. | Charlotte, NC 28223  
Phone: 704-687-5766 | Fax: 704-687-6912  
Office Location: 534 Reese  
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UNC CHARLOTTE  
J. Murrey Atkins Library

Consultation on Library Holdings

To: Mitch Cordova

From: Jean Hiebert

Date: April 10, 2011

Subject: Sleep Neuroscience and Atkins Library Holdings

Summary of Librarian's Evaluation of Holdings:

Evaluator: Jean Hiebert

Date: 4/10/11

Please Check One:

Holdings are superior

Holdings are adequate

Holdings are adequate only if Dept. purchases additional items.

Holdings are inadequate

Comments:

Jean Hiebert  
Evaluator's Signature

4/10/11  
Date

**UNC Charlotte Atkins Library Holdings - B.S. Degree in Neurodiagnostics & Sleep Science**

Advances in sleep research	edited by Elliot D. Weitzman	1974
An evolutionary psychology of sleep and dreams	McNamara, Patrick	2004
Atlas of sleep medicine	Chokroverty, Sudhansu	2005
Basic sleep mechanisms	Edited by Olga Petre-Quadens [and] John D. Schlag	1974
Behavioral sleep medicine [electronic resource].		2003
Birds asleep	Skutch, Alexander F.	1989
Brain mechanisms of sleep	editors, Dennis J. McGinty ... [et al.].	1985
Brain mechanisms of sleep	editors, Dennis J. McGinty	1985
Brainstem control of wakefulness and sleep	Mircea Steriade and Robert W. McCarley	1990
Circadian clocks	Moore	2001
Clinical aspects of sleep and sleep disturbance	edited by Terrence L. Riley	1985
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**Sandra G. Mathis, BA, RPSGT, RLVT**

**Clinical Coordinator**

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January 5, 2009

Mary Ellen Wells, MS, R.EEG T, R.NCS T.  
Clinical Assistant Professor  
Department of Allied Health Sciences  
UNC School of Medicine  
CB #7120 Chapel Hill, NC 27599

Dear Ms. Wells,

I would like to express my support for the Neurodiagnostics and Sleep Science Baccalaureate degree program at the University of North Carolina, Chapel Hill. The program as I understand it, will advance the profession of Polysomnography by building the knowledge and skills which are critical to that practice. In addition, the program will give our students in the community college system the opportunity to obtain a degree beyond that of the Associates in Applied Science.

Additionally, there are many Registered Polysomnographic Technologists who would like to have the opportunity to advance their knowledge and skills. This educational opportunity would empower and enlighten them to provide an increased excellence in patient care and facility management.

This is a unique opportunity for the educational system in North Carolina to reach a level of excellence in this health profession. The program will advance the profession of polysomnography, not only in North Carolina, but around the world. As an educator, I believe the implementation of this program will produce graduates who can be involved in the educational arena, whether that be in the college system, or in hospitals or free-standing sleep laboratories.

I am looking forward to the success of your proposed program, and would be honored to assist you in any capacity you may deem beneficial.

Sincerely,

Sandra G. Mathis, BA, AAS, RPSGT, RLVT  
Polysomnography Clinical Coordinator,  
Pitt Community College



September 17, 2008

To Whom It May Concern:

As a sleep professional and an educator, I highly recommend the approval of the Neurodiagnostics and Sleep Science baccalaureate degree program at the University of North Carolina in Chapel Hill, North Carolina. The implementation of this program will produce highly educated and qualified graduates to fill the faculty vacancies in this arena for the community college system, along with the vacancies that exist in the hospitals and freestanding labs across the state.

This is an outstanding opportunity for the educational system in North Carolina to excel in this health profession. The University of North Carolina is a leader in many fields and will be setting the highest standards possible by providing pathways in this profession that currently do not exist anywhere else. I am very committed to the success of this program and its graduates.

Once again, the approval of this baccalaureate degree in Neurodiagnostics and Sleep Science would be a wonderful educational asset not just to our state, but also to others across the country.

Sincerely,

A handwritten signature in cursive script that reads "Karen Monarchy Rowe".

Karen Monarchy Rowe, BS, AAS, RPSGT  
Polysomnography Program Head/Instructor, Lenoir Community College



COMMUNITY COLLEGE

PO Box 185 • Grantsboro, N.C. 28529-0185

October 8, 2008

Ms. Mary Ellen Wells, MS, R.EEG T, R.NCS T.  
Clinical Assistant Professor/Program Director  
Dept. of Allied Health Sciences  
UNC School of Medicine  
The University of North Carolina at Chapel Hill, CB#7120  
Chapel Hill, NC 27599

Dear Ms. Wells,

We at Pamlico Community College are very excited about the opportunity to be a part of the expansion and growth of the Neurodiagnostics field, and the development of the new BS degree in Neurodiagnostics and Sleep Sciences at UNC. This is definitely a growing field of study with new emerging opportunities for research and service for people suffering from sleep disorders.

We at Pamlico Community College realize first hand, the importance of having quality instructors for our EDT Program. Technicians coming straight from the field into the classroom lack some of the teaching and classroom management techniques that could make them much more effective. A BS degree focused to take the well-trained technician to the next level as instructor is very progressive and insightful. Although we are one of only a few colleges in the country with a nationally-accredited EDT program, we see the interest emerging at other institutions, and the demand for well-prepared technicians and instructors in this field is growing.

We are very supportive of your establishing a BS Degree in this field of study which will help assure that qualified instructors are available to meet the growing requirements for Associate Degree credentialing in the field. We also look forward to future discussions of our establishing a two-plus-two agreement with you where we provide the first two years of EDT instruction at Pamlico, and the student can complete the last two years of a four year degree with UNC.

We are here to help you in any way we can, and appreciate the opportunity to work with you as you develop your BS degree program in Neurodiagnostics and sleep Sciences.

Sincerely,

F/ Marion Altman, Jr., EdD.  
President  
Pamlico Community College





David T. DeRemer BS RRT, RCP, RPSGT  
Polysomnography Program Coordinator-Instructor  
Sandhills Community College  
3395 Airport Rd.  
Pinehurst, NC 28374  
October 8, 2008

UNC School of Medicine  
Department of Allied Health Sciences  
The University of North Carolina at Chapel Hill  
Chapel Hill, NC 27559-7120

Dear Mary Ellen Wells:

I am the Polysomnography Program Director at Sandhills Community College, I am writing to express my full support for the Neurodiagnostic and Sleep Science Program you are developing.

There is an ever increasing need for higher education in the field polysomnography and sleep. With current changes to guidelines and accreditation standards by the American Academy of Sleep Medicine, it is clear that programs such as this are necessary and viable. This program will help increase the number of possible educators and future leaders in our field.

Students attending the Associate Degree Polysomnography Technology program here at Sandhills Community College are very excited about this opportunity to further educate themselves in their chosen field of study and future careers.

I urge you to move forward on the decision to develop this program, and strongly encourage those with the deciding power to approve this program so it may become a reality.

Sincerely,

A handwritten signature in black ink, appearing to read "D. DeRemer", written in a cursive style.

David T. DeRemer BS RRT, RCP, RPSGT



1 November 2008

Mary Ellen Wells, MS, R. EEG T., R. NCS T.  
Clinical Assistant Professor, Program Director Neurodiagnostics and  
Sleep Science  
Dept of Allied Health Sciences UNC School of Medicine  
The University of North Carolina at Chapel Hill, CB#7120 Chapel Hill,  
NC 27599

Dear Mary Ellen,

The American Society of Electroneurodiagnostic Technologists and the ASET Bachelor's Degree Task Force sends our congratulations and support to your Bachelor's degree program in Neurodiagnostics and Sleep Science. The ASET Bachelor's Degree Task Force has been working this last year to develop ways to assist in the development of Bachelor's degree programs across the country. We are pleased to learn of the planning for a Bachelor's degree program in Neurodiagnostics and Sleep Science at the University of North Carolina at Chapel Hill.

As the field of electroneurodiagnostics grows it has become increasingly difficult to include all the specialties of Electroneurodiagnostics into a two-year curriculum especially including the many applications of neuromonitoring in surgery. A Bachelor's degree is landmark for the preparation of electroneurodiagnostic technologists in their field. It also brings forth future leaders who are educated and prepared to be the decision makers in the health care industry.

Staff positions in electroneurodiagnostic technology remain vacant for months and years. Our field will greatly benefit from your graduates. The ASET office receives many calls from employers with job vacancies they wish to fill. There is an undersupply of qualified and credentialed END professionals to fill these employment opportunities. Sadly, job positions are oftentimes filled with under-qualified individuals who less than prepared to provide quality care to neurologically ill patients. We look forward to a future when the supply of graduates from both Associate's and Bachelor's degree programs will meet the demand in electroneurodiagnostics.

Congratulations to you for your quantum leap forward for the field of Electroneurodiagnostic Technology. Please contact ASET because we are your program resource.

On behalf of the ASET Bachelor's Degree Task Force with sincerest and best regards,

Elizabeth Mullikin, R.EEG/EP T., CNIM, MPA, MA, MNM  
ASET President



UNC  
DEPARTMENT  
OF NEUROLOGY

10/07/08

To Whom It May Concern:

I am writing in support of the Neurodiagnostics and Sleep Science Baccalaureate degree program. North Carolina is currently in shortage of qualified faculty to teach associate degree programs and to uphold leadership roles within the discipline. Our state is currently tied in the nation for the greatest number of Polysomnography associate degree programs in the nation but we are still unable to produce enough graduates to fulfill the current need. These associate degree programs must employ qualified faculty to maintain accreditation. This new degree will offer the advanced education for graduates to fulfill the educational and leadership roles in the North Carolina Community College System.

Our understanding of sleep disorders and sleep medicine has greatly expanded our knowledge of the implications these disorders have on our everyday lives. Sleep disorders are now tied with cardiovascular risk, industrial and motor vehicle accidents and general productivity and mood. We understand the importance of high quality work and the need to have qualified trainers to produce these individuals.

I believe that this new program will produce graduates that will fill key leadership and educational roles in our state. I am sure this program will serve as a national model for other programs of its type throughout the world.

Sincerely,

Bradley V. Vaughn, MD  
Professor and Vice Chairman  
Director of Sleep and Epilepsy  
Department of Neurology  
University of North Carolina



# Council for Allied Health in North Carolina

**Chair:**

Karen Luken, Chair  
NC Office on Disability and Health  
CB #8185, UNC-CH  
FPG Child Development Institute  
Chapel Hill, NC 27599-8185  
[kluken@email.unc.edu](mailto:kluken@email.unc.edu)  
919-966-0881

**Executive Director:**

Alisa E. Debnam, M.P.H.  
CB #7302, 4101 Bondurant Hall  
321 South Columbia Street  
Chapel Hill, NC 27599-7302  
[alisa\\_debnam@med.unc.edu](mailto:alisa_debnam@med.unc.edu)  
919-636-8160

**Allied Health Associations:**

American Massage Therapy Association-NC  
American Soc. of Phlebotomy Technicians  
Art Therapy Association of NC  
Carolinas Chapter of the American  
Horticultural Therapy Association  
Music Therapy Association of NC  
NC Academy of Physician Assistants  
NC Association of Blood Bankers  
NC Assoc. of EMS Administrators  
NC Dental Assistants Association  
NC Dental Hygiene Association  
NC Dietetic Association  
NC Health Information Management Assoc.  
NC Nuclear Medicine Technologist, Inc.  
NC Occupational Therapy Association  
NC Physical Therapy Association  
NC Recreational Therapy Association  
NC Society for Clinical Laboratory Science  
NC Society of Cytology  
NC Society of Histopathology Technologists  
NC Society of Medical Assistants  
NC Society of Radiologic Technologists  
NC Society for Respiratory Care  
NC Speech, Hearing and Language Assoc.  
NC State Assoc. of Surgical Technologists  
NC State Soc. of Am. Medical Technologists  
NC Ultrasound Society

**Educational Organizations:**

NC Area Health Education Centers  
(AHEC) Program  
NC Independent Colleges and Universities  
NC Health Careers Access Programs  
NC State Education Assistance Authority  
NC Community College System  
University of North Carolina System

**Employers:**

NC Association for Home Care and Hospice  
NC Department of Health & Human Services  
• Division of Public Health  
• Office of Rural Health & Community Care  
• Division of Mental Health, DD and  
Substance Abuse Services  
NC Department of Public Instruction  
NC Health Care Facilities Association  
NC Hospital Association  
NC Assoc. of Health Care Recruiters

**Staff:**

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Chapel Hill, NC 27599-7335  
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Phone: 919-966-8566; Fax: 919-843-3250

November 18, 2008

Mary Ellen Wells

The University of North Carolina at Chapel Hill  
Department of Allied Health Sciences  
CB#7120, 4102 Bondurant Hall  
321 South Columbia Street  
Chapel Hill, North Carolina , 27599-7120

Dear Mrs. Wells:

This letter is written to express support for the need of well-trained individuals across North Carolina for Neurodiagnostics & Sleep Science.

The Council for Allied Health in North Carolina represents more than 21,000 allied health professionals from 26 professions. In addition to providing a venue for sharing and distributing information among the various allied health professions, the Council works with the SHEPS Center for Health Services Research to produce a regular set of allied health workforce vacancy studies. Based on the research, sleep technologists are among the most critically needed professionals in health care. According to the American Association of Sleep Medicine (AASM), more than 70 million people in our nation have sleep disorders, most of which are unaware of it.

While a number of new programs at Community Colleges have been started over the past years, significant shortages continue to plague our state. North Carolina currently has 27 accredited sleep labs. Even with this number, patients wait up to three months to have a sleep study conducted. Moreover, Community Colleges need faculty to prepare additional polysomnography technicians. Thus the need for a four-year program to develop faculty. UNC-Chapel Hill is currently working to develop such a program.

The Council for Allied Health in North Carolina fully supports this initiative. The development of such a program would greatly benefit the state. We applaud these efforts and stand ready to assist if needed.

Sincerely,

Alisa E. Debnam, M.P.H.  
Executive Director



North Carolina Association of Sleep Technologists  
P.O. Box 80726  
Raleigh, NC 27623  
[www.ncastsleep.org](http://www.ncastsleep.org)

Mary Ellen Wells, MS, R.EEG T, R.NCS T.  
Clinical Assistant Professor  
Department of Allied Health Sciences  
UNC School of Medicine  
CB #7120 Chapel Hill, NC 27599

October 28, 2008

Dear Mrs. Wells,

The North Carolina Association of Sleep Technologists would like to express our strong support for the Neurodiagnostics and Sleep Science baccalaureate degree program at the University of North Carolina, Chapel Hill. This program will produce highly qualified individuals to fill the shortage of Sleep and Neurodiagnostic Technologist in laboratories, and Instructors for the Community Colleges and training programs throughout the State of North Carolina. We recognize that the University of North Carolina sets the highest academic standards and constantly strives for excellence.

Your program advances our profession to a higher level by offering an opportunity to build the knowledge and skills that are essential to the practice of Polysomnography, and most importantly, to delivering the highest level of patient care possible. The North Carolina Association of Sleep Technologists was created to promote excellence in sleep medicine health care, education and research, advocate for recognition of sleep disorders and provide an exchange of sleep information to all sleep professionals in the State of North Carolina.

I believe that we share common goals and look forward to the successful implementation of this program. We are committed to act as a resource and offer to assist you and your program in any way possible.

Sincerely,

Will Underwood, RPSGT  
President, North Carolina Association of Sleep Technologists  
[contact@ncastsleep.org](mailto:contact@ncastsleep.org)



**Clinical Neurophysiology Labs  
Sleep Disorders Center**

May 26, 2010

Mitchell L. Cordova  
Professor and Chairperson Department of Kinesiology  
The University of North Carolina at Charlotte  
9201 University City Blvd.  
Charlotte, NC 28223

Dear Dr. Cordova:

The University of North Carolina (UNC) Hospitals is in support of the Neurodiagnostics and Sleep Science (NDSS) baccalaureate program being proposed at the University of North Carolina at Charlotte and in collaboration with the University of North Carolina at Chapel Hill. Upon request by the NDSS program once the degree program is established we will initiate a student contract between the program and UNC Hospitals Clinical Neurophysiology Labs and Sleep Disorders Center and providing that all criteria is met than UNC Hospitals is willing to provide clinical instruction in its Clinical Neurophysiology Laboratory and Sleep Disorders Center according to the current plan of study of the NDSS program at The University of North Carolina at Charlotte.

Please do not hesitate to call if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Kyle Kalkowski". The signature is fluid and cursive, with a horizontal line extending to the right.

Kyle K. Kalkowski  
Director  
Clinical Neurophysiology Labs  
UNC Hospitals  
Chapel Hill, NC 27514  
(919) 966-1686

## **Cordova, Mitch**

---

**From:** Coyle, Joe  
**Sent:** Wednesday, April 06, 2011 2:43 PM  
**To:** Cordova, Mitch  
**Subject:** NDSS Program

Dear Dr. Cordova,

The BSRT Program within the Department of Kinesiology at UNC Charlotte is completely supportive of the development of the NDSS program here that will be in collaboration with the School of Medicine at UNC Chapel Hill. The NDSS Program will complement our program well and provide additional opportunities for our Respiratory Therapy students. Our ultimate goal is to provide tracks for students to broaden their opportunities; the NDSS is a first strong step in that direction.

There are a number of courses that we currently offer that may be beneficial for the NDSS student. Such examples include: RESP 4102 Program Administration and RESP 4103 Evidence-based Practice of Respiratory Care. I am in favor of cross listing these courses with NDSS as well as exploring future options for cross listing courses in the NDSS program to the current Respiratory Therapy curriculum.

Thanks for your efforts to develop this collaboration between both programs.

Joseph P. Coyle, MD  
Interim Program Coordinator – Respiratory Therapy  
Department of Kinesiology  
UNC Charlotte



April 7, 2011

Dr. Mitch Cordova, PhD  
Chair, Department of Kinesiology  
College of Health and Human Services  
9201 University City Boulevard  
Charlotte, NC 28223

Dear Dr. Cordova:

I write to support the Department of Kinesiology's decision to offer a new degree program entitled, Neurodiagnostics and Sleep Science. I understand from our previous communication that this program is being established similarly to your current respiratory therapy degree program. The School of Nursing will support your new degree program by continuing to offer NURN 4201 (Information Technology: Application in Health Care). This course taught by Professor Susan Lynch for students in the Respiratory Program has been well-received, with positive student evaluations. The course covers broad topics in health care that could benefit all students within the College of Health and Human Services.

In summary, I highly support the offering of a Neurodiagnostics and Sleep Science degree program in the Department of Kinesiology. I wish you much success in this new program development. Please let me know if I can further assist you and your faculty regarding this matter. I can be reached using the contact information listed below.

Sincerely,

Dee Baldwin, PhD, RN, FAAN  
Associate Dean/Director, School of Nursing  
9201 University City Boulevard  
Charlotte, NC 28269  
[dbaldwi5@uncc.edu](mailto:dbaldwi5@uncc.edu)  
704-687-7952 (t)  
704-687-6071 (f)





**UNC CHARLOTTE**  
**College of Health and Human Services**

**School of Nursing**

9201 University City Blvd, Charlotte, NC 28223-0001  
T704/687.7952 [www.nursing.uncc.edu](http://www.nursing.uncc.edu)

April 6, 2011

Dear Dr. Cordova,

I would like to offer my support for your proposal to include NURN 4201 Information Technology: Application in Healthcare in the Health Diagnostic and Sleep Science Major. As the RN BSN coordinator and instructor for NURN 4201, the course is designed to meet the needs of multiple disciplines in the healthcare field. I feel the course will address the unique perspective of information technology advances in the delivery of care to clients in various settings and will meet the needs for the major.

Sincerely,

Susan Lynch, MSN, RN, CNE

RN BSN Coordinator

School of Nursing

UNC Charlotte

**The School of Nursing is accredited by the Commission on Collegiate Nursing Education (CCNE)**

**The UNIVERSITY of NORTH CAROLINA at CHARLOTTE**

*An Equal Opportunity/Affirmative Action Employer*



**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 3101: Pathophysiology of Sleep, Neurological, and Related Disorders

**Credits, Days/Time, Location:** 3 Credits; distance education

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** Students will learn about diseases affecting the nervous system, the sleep/wake cycle, and psychiatric and behavioral disorders. Topics include etiology, clinical manifestations, pharmacology, disease prevention, and overview of treatments. Prerequisite: Admittance into NDSS program.

**Course Objectives:** Upon completion of this course, students will

- Define and differentiate diseases and disorders affecting the sleep/wake cycle, the nervous system, and psychiatric and psychological disorders
- Explain clinical correlation principles and identify clinical manifestations
- Define disease prevention techniques and treatment options

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of "C" for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group/team collaboration, and peer-teaching or lab experiences. The teams will be formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Principles and Practice of Sleep Medicine (ebook through Health Science Library library)

Principles and Practice of Pediatric Sleep Medicine (ebook through Health Science Library)

Netters Neurology (ebook through Health Science Library)

Other readings will be provided

**Evaluation Methods:**

11 Quizzes (22 points)

11 Assignments (33 points)

Participation (11 points)

Group project (9 points)

4 Module exams (25 points)

Total (100 points) = 100%

**Grade Scale:**

A = 91-100%

B = 81 - 90%

C = 71 - 80%

D = 61 - 70%

F = 60 and below

**Topical/Unit Outline:**

- Nervous system development
- International Classification of Sleep Disorders
  - Insomnias
  - Sleep Related Breathing Disorders
  - Hypersomnias of Central Origin Not Due to a Circadian Rhythm Sleep Disorder, Sleep Related Breathing Disorder, or Other Cause of Disturbed Nocturnal Sleep
  - Circadian Rhythm Sleep Disorders
  - Parasomnias
  - Sleep Related Movement Disorders
  - Isolated Symptoms, Apparently Normal Variants, and Unresolved Issues
  - Other Sleep Disorders
- Pediatric sleep Pathophysiology
  - Circadian rhythm disorders
  - Disorders of initiating and maintaining sleep
  - Attention deficit
  - Hyperactivity
  - Narcolepsy
  - Idiopathic hypersomnia
  - Post-traumatic hypersomnia
  - Klein-Levin syndrome and recurrent hypersomnias

- Enuresis
  - Sleep-related breathing disorders
  - Parasomnias
  - Disorders of and affecting the nervous system
    - Seizure classifications
    - Epilepsy
    - Congenital and developmental malfunctions
    - Movement disorders
    - Pain disorders
    - Neuromuscular disorders
    - Toxic and metabolic diseases
    - Nutritional disorders
    - Tumors
    - Dementias
  - Psychiatric and Behavioral disorders
    - Schizophrenia and psychotic disorders
    - Depression and mood disorders
    - Anxiety disorders
    - Psychological disorders
    - Somatoform disorders
    - Dissociative disorders
    - Personality disorders
    - Seasonal affective disorder
    - Substance abuse disorders
    - Eating disorders
-

## *Appendix*

### UNIVERSITY, COLLEGE AND DEPARTMENTAL POLICIES

#### **University Policies:**

##### **Code of Student Responsibility:**

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**Special Needs:** If you have a documented disability and require accommodation in this course, contact Disability Services, Fretwell 230, phone: 687 4355 voice/TDD) the first week of the semester. Information about available services may be found at <http://www.uncc.edu/disability-services>. Accommodations for learning will be arranged by that office and communicated to the Instructor. If you speak English as a second language, please inform the instructor.

##### **Diversity Statement:**

UNC Charlotte strives to create an academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

All students are required to abide by the UNC Charlotte Sexual Harassment Policy (<http://www.legal.uncc.edu/policies/ps-61.html>) and the policy on Responsible Use of University Computing and Electronic Communication Resources (<http://www.legal.uncc.edu/policies/ps-66.html>). Sexual harassment, as defined in

the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards.

Religious Accommodation: (pending final approval and wording.)  
<http://legal.uncc.edu/policies/ps-134.html>

**Clinical Policy:** Clinical attendance is required in order to meet clinical objectives. All clinical absences must be made up. Frequent absences may result in withdrawal from the course, which is done at the discretion of the instructor. Tardy is defined as leaving early or arriving late for a clinical rotation. Three tardies count as an absence and must be made up.

Any absence due to illness of three consecutive days or more requires a release signed by the physician stating the student can return to clinical without any restrictions on activities.

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Please reference the NDSS website for the most current information on clinical rotations and policies.

**Disaster Statement:** Check UNC Charlotte and UNC Chapel Hill's website for alerts regarding closures of the Universities. Additionally, all course materials will be available through your Moodle course site.

**Department Policies:** Course syllabi for the current academic year (Summer, Fall and Spring) are kept in a central location in each Unit office. Unit or school policies will direct the retention of syllabi beyond the current academic year. The syllabus relating to a clinical practicum or internship of a College course, undergraduate and graduate, will contain the following statement regarding student responsibility for complying with requirements of affiliation agreements.

*The student is responsible for complying with requirements in affiliation agreements affecting student in clinical setting experiences.*

**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 3102: Neurological and Sleep Diagnostic and Therapeutic Methods, and Monitoring Services

**Credits, Days/Time, Location:** 3 Credits; distance education

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** Students will learn about services available at sleep and neurophysiology laboratories and interpretation of diagnostic findings. Topics include sleep procedures, electroencephalography, and intracranial/long-term epilepsy monitoring. Students participate in laboratory practice sessions. Prerequisite: Admittance into NDSS program.

**Course Objectives:** Upon completion of this course, students will

- Define principles of optimal advanced procedures in sleep science, electroencephalography (EEG), and long term epilepsy monitoring.
- Communicate effectively with other professionals about advanced clinical procedures and current practices in neurodiagnostics and sleep science
- Explore various forms of assessment and treatments related to specific sleep disorder and neurophysiologic diagnoses.
- Explain the underlying theories and models supporting current neurodiagnostic and sleep science procedures.
- Demonstrate optimal techniques for performing advanced neurodiagnostic and sleep science procedures using Web based case studies
- Manipulate and correctly utilize diagnostic and therapeutic equipment and devices in a simulated environment for optimal care of patients with sleep disorders, encephalopathies, seizure disorders, epilepsies, and other neurological disorders.

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.

4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of “C” for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group /team collaboration, and peer-teaching or lab experiences. The teams will be formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Current Practice of Clinical Electroencephalography by Ebersole and Pedley, 3<sup>rd</sup> Edition. ISBN-10: 0-7817-1694-2  
Principles and Practice of Sleep Medicine (ebook through UNC Health Science Library)  
Principles and Practice of Pediatric Sleep Medicine (ebook through Health Science Library)  
Web camera/microphone and high speed Internet connection  
Computer or camera capable of recording short video

**Evaluation Methods:**

11 Quizzes (22 points)  
11 Assignments (33 points)  
Participation (11 points)  
Group project (9 points)  
4 Module exams (25 points)  
Total (100 points) = 100%

**Grade Scale:**

A = 91-100%  
B = 81 - 90%  
C = 71 - 80%  
D = 61 - 70%  
F = 60 and below

**Topical/Unit Outline:**

Module 1 – Electroencephalography (5 weeks)

- Intro to course
- Cortical generators and propagation
- Electrical fields and recording techniques
- Activation methodology
- Identification, reduction/elimination, and monitoring of artifacts
- Evaluating patterns and variants
- Seizure case studies
- Slowing and drug effects



- Electrocerebral inactivity, coma, and periodic patterns
- Encephalopathy case studies
- Focal abnormality case study
- Slowing case study
- Coma and cerebral death case study
- Neonatal and pediatric EEG
- Current issues and trends in EEG
- Electricity and safety considerations
- Effective communication

#### Module 2 – Sleep Procedures (5 weeks)

- Polysomnography
- Multiple sleep latency test
- Maintenance of wakefulness test
- Specialized sleep and sleepiness evaluation procedures
- Cardiopulmonary assessment and monitoring
- Neurological disorders in sleep
- Determination of the effectiveness of treatment for sleep disorders
- Current issues and trends in sleep science
- Quality assurance
- Polysomnography case studies (laboratory)

#### Module 3 - Long Term Monitoring, Ambulatory EEG, Intracranial Monitoring, Continuous EEG in the ICU, Quantitative EEG (5 weeks)

- Ambulatory EEG
  - Long term epilepsy monitoring
  - Intracranial Monitoring
  - Continuous EEG in the ICU
  - Quantitative EEG
  - Case studies (laboratory)
-

## *Appendix*

### UNIVERSITY, COLLEGE AND DEPARTMENTAL POLICIES

#### **University Policies:**

##### **Code of Student Responsibility:**

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**Special Needs:** If you have a documented disability and require accommodation in this course, contact Disability Services, Fretwell 230, phone: 687 4355 voice/TDD) the first week of the semester. Information about available services may be found at <http://www.uncc.edu/disability-services>. Accommodations for learning will be arranged by that office and communicated to the Instructor. If you speak English as a second language, please inform the instructor.

##### **Diversity Statement:**

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the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards.

Religious Accommodation: (pending final approval and wording.)  
<http://legal.uncc.edu/policies/ps-134.html>

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Any absence due to illness of three consecutive days or more requires a release signed by the physician stating the student can return to clinical without any restrictions on activities.

Any injury that could jeopardize the safety of the student and/or the client requires a release signed by the physician stating the student may return to clinical without any restrictions on activities.

Please reference the NDSS website for the most current information on clinical rotations and policies.

**Disaster Statement:** Check UNC Charlotte and UNC Chapel Hill's website for alerts regarding closures of the Universities. Additionally, all course materials will be available through your Moodle course site.

**Department Policies:** Course syllabi for the current academic year (Summer, Fall and Spring) are kept in a central location in each Unit office. Unit or school policies will direct the retention of syllabi beyond the current academic year. The syllabus relating to a clinical practicum or internship of a College course, undergraduate and graduate, will contain the following statement regarding student responsibility for complying with requirements of affiliation agreements.

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**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 3104: Advanced Sleep and Neurodiagnostic Clinical Procedures

**Credits, Days/Time, Location:** 3 Credits; distance education

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** Students will learn advanced procedures performed in sleep centers and neurophysiology laboratories. Topics include nerve conduction velocities, electronystagmography, actigraphy, and autonomic testing techniques. Students participate in laboratory practice sessions. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3101 and NDSS 3102.

**Course Objectives:** Upon completion of this course, students will

- Define principles of performing optimal nerve conduction velocities (NCV), electronystagmography (ENG), actigraphy, and autonomic testing techniques
- Demonstrate proper patient assessment techniques
- Explain equipment verification, maintenance, and troubleshooting techniques for NCV, ENG, and autonomic testing equipment and actigraphy devices
- Identify implications of nocturnal ventilator support for patients with breathing disorders
- Describe methodology and implications of evidence based practice
- Perform optimal NCV, ENG, and autonomic testing procedures including patient preparation, correct utilization, maintenance, and troubleshooting of equipment, data acquisition, and reporting
- Verify data acquisition and apply corrective measures for optimal recording.
- Explain alternative therapeutic techniques and current trends in the diagnosis and treatment of sleep disorders
- Describe actigraphy and its uses in the diagnosis and treatment of sleep related disorders

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".

3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of “C” for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group/team collaboration, and peer-teaching or lab experiences. The teams will be formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Web camera/microphone and high speed Internet connection  
Computer or camera capable of recording short video  
Readings will be provided by your instructor

**Evaluation Methods:**

11 Quizzes (22 points)  
11 Assignments (33 points)  
Participation (11 points)  
Group project (9 points)  
4 Module exams (25 points)  
Total (100 points) = 100%

**Grade Scale:**

A = 91-100%  
B = 81 - 90%  
C = 71 - 80%  
D = 61 - 70%  
F = 60 and below

**Topical/Unit Outline:**

- Patient assessment
  - Communication
  - History
  - Vital signs
  - Symptomatology
  - Physical exam
  - Mini Mental Status Exam and other assessment techniques
  - Exhibiting professionalism
- Actigraphy

- Clinical applications
    - Methodology and techniques
    - Monitoring trends and data analysis
  - Suggested Immobilization Test
  - Gastrointestinal monitoring
    - Instrument performance verification
    - Optimal recording strategies based on patient status
    - Nocturnal gastroesophageal reflux underlying sleep disorders (case study)
  - Chronobiologic monitoring
    - Instrument performance verification
    - Optimal recording strategies based on patient status
    - Biologic and behavioral aspects of circadian rhythms (case study)
  - Ventilator support for patients with breathing disorders
  - Portable monitoring for sleep related disorders
  - Auto-titration for treatment of sleep related breathing disorders
  - Alternative therapeutic techniques for sleep related disorders
  - Autonomic testing
    - Quantitative Sudomotor Axon Reflex Testing (QSART)
    - Cardiovascular response testing
    - Quantitative Sensory Testing (QST)
    - Equipment verification and maintenance
    - Procedure reliability evaluation
    - Troubleshooting
    - Case studies
  - Nerve conduction velocity
    - Upper extremity studies
    - Lower extremity studies
    - Facial studies
    - Reflex studies
    - Uncommon studies and anatomical variants
    - Equipment verification and maintenance
    - Procedure reliability evaluation
    - Troubleshooting
    - Case Studies
  - Electronystagmography
  - Intracarotid amobarbital procedure (WADA test)
  - Special considerations for physiologic monitoring in infants, children, and the elderly
  - Evidence based practice
  - Current issues and trends in neurodiagnostics and sleep science
-

## *Appendix*

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<http://legal.uncc.edu/policies/ps-134.html>

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**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 3405: Practicum

**Credits, Days/Time, Location:** 3 Credits; M-F 8am-5pm; UNC Hospitals or other approved facility

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** Sleep disorders center and clinical neurophysiology laboratory clinical experience. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3104.

**Course Objectives:** Upon completion of this course, students will

- Demonstrate professional behavior and cultural awareness in the clinical setting
- Perform optimal sleep and neurological testing/therapeutic procedures, and physiological monitoring procedures as ordered by licensed physicians
- Evaluate physiologic data records
- Utilize accurate recording techniques and perform patient preparation while taking all measures for infection control according to professional guidelines

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of "C" for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group /team collaboration, and peer-teaching or lab experiences. The teams will be

formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Note taking materials. Reading materials may be provided by your instructor.

**Evaluation Methods:**

Midterm Exam	20%
Participation	60%
Final Exam	20%

**Grade Scale:**

- A = 91-100%
- B = 81 - 90%
- C = 71 - 80%
- D = 61 - 70%
- F = 60 and below

**Topical/Unit Outline:**

- Professional interactions between technologists, patients, staff, physicians, and management
  - Obtain and evaluate high quality physiologic data recordings
  - Accurate preparation of patients while following all professional recording standards and infection control guidelines, as well as following clinic policies and procedures
  - Review clinical cases with senior technologists and physicians
-

## *Appendix*

### UNIVERSITY, COLLEGE AND DEPARTMENTAL POLICIES

#### **University Policies:**

##### **Code of Student Responsibility:**

“The *UNC Charlotte Code of Student Responsibility* (the Code) sets forth certain rights and responsibilities in matters of student discipline. The Code defines these responsibilities and guarantees you certain rights that ensure your protection from unjust imposition of disciplinary penalties. You should familiarize yourself with the provisions and procedures of the Code” (Introductory statement from the UNC Charlotte brochure about the Code of Student Responsibility). The entire document may be found at this internet address: <http://www.legal.uncc.edu/policies/ps-105.html>.

##### **Academic Integrity:**

Students have the responsibility to know and observe the requirements of The UNC Charlotte Code of Student Academic Integrity. This code forbids cheating, fabrications, or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Academic evaluations in this course include a judgment that the student’s work is free from academic dishonesty of any type; and grades in this course therefore should be and will adversely affected by academic dishonesty. Students who violate the code can be expelled from UNC Charlotte. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction in the course grade. In almost all cases the course grade is reduced to F. Copies of the code can be obtained from the Dean of Students Office or <http://www.uncc.edu/dos/judicial.htm>. Students are expected to report cases of academic dishonesty to the course’s instructor.

**Special Needs:** If you have a documented disability and require accommodation in this course, contact Disability Services, Fretwell 230, phone: 687 4355 voice/TDD) the first week of the semester. Information about available services may be found at <http://www.uncc.edu/disability-services>. Accommodations for learning will be arranged by that office and communicated to the Instructor. If you speak English as a second language, please inform the instructor.

##### **Diversity Statement:**

UNC Charlotte strives to create an academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

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the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards.

Religious Accommodation: *(pending final approval and wording.)*  
<http://legal.uncc.edu/policies/ps-134.html>

**Clinical Policy:** Clinical attendance is required in order to meet clinical objectives. All clinical absences must be made up. Frequent absences may result in withdrawal from the course, which is done at the discretion of the instructor. Tardy is defined as leaving early or arriving late for a clinical rotation. Three tardies count as an absence and must be made up.

Any absence due to illness of three consecutive days or more requires a release signed by the physician stating the student can return to clinical without any restrictions on activities.

Any injury that could jeopardize the safety of the student and/or the client requires a release signed by the physician stating the student may return to clinical without any restrictions on activities.

Please reference the NDSS website for the most current information on clinical rotations and policies.

**Disaster Statement:** Check UNC Charlotte and UNC Chapel Hill's website for alerts regarding closures of the Universities. Additionally, all course materials will be available through your Moodle course site.

**Department Policies:** Course syllabi for the current academic year (Summer, Fall and Spring) are kept in a central location in each Unit office. Unit or school policies will direct the retention of syllabi beyond the current academic year. The syllabus relating to a clinical practicum or internship of a College course, undergraduate and graduate, will contain the following statement regarding student responsibility for complying with requirements of affiliation agreements.

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**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 4101: Principles and Practice of Healthcare Education

**Credits, Days/Time, Location:** 3 Credits; distance education

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** This course provides a foundation in the principles and practice of healthcare education. Topics include the educational process, learner characteristics, and teaching and learning theories, techniques and strategies. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3101.

**Course Objectives:** Upon completion of this course, students will

- Identify and differentiate responsibilities and qualifications of faculty and staff in a health care education setting
- Observe and classify student learning styles
- Define learning theories
- Define and apply instructional techniques and strategies

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of "C" for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group /team collaboration, and peer-teaching or lab experiences. The teams will be formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Health Professional as Educator – Principles of Teaching and Learning by Bastable, Gramet, Jacobs, and Sopczyk. ISBN-13 9780763792787

Other readings will be provided

Note taking materials

**Evaluation Methods:**

11 Quizzes (22 points)

11 Assignments (33 points)

Participation (11 points)

Group project (9 points)

4 Module exams (25 points)

Total (100 points) = 100%

**Grade Scale:**

A = 91-100%

B = 81 - 90%

C = 71 - 80%

D = 61 - 70%

F = 60 and below

**Topical/Unit Outline:**

- Perspectives on teaching and learning
    - Overview of education in healthcare
    - Ethical, legal, and economic foundations of the educational process
    - Applying learning theories to healthcare practice
  - Characteristics of the learner
    - Determinants of Learning
    - Developmental Stages of the Learner
    - Compliance, Motivation, and Health Behaviors of the Learner
    - Literacy in the Adult Client Population
    - Gender, Socioeconomic, and Cultural Attributes of the Learner
    - Educating Learners with Disabilities
  - Techniques and strategies for teaching and learning
    - Behavioral Objectives
    - Instructional Methods and Settings
    - Instructional Materials
    - Technology in Education
  - Evaluation in Healthcare Education
-

## *Appendix*

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**Special Needs:** If you have a documented disability and require accommodation in this course, contact Disability Services, Fretwell 230, phone: 687 4355 voice/TDD) the first week of the semester. Information about available services may be found at <http://www.uncc.edu/disability-services>. Accommodations for learning will be arranged by that office and communicated to the Instructor. If you speak English as a second language, please inform the instructor.

##### **Diversity Statement:**

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Religious Accommodation: (pending final approval and wording.)  
<http://legal.uncc.edu/policies/ps-134.html>

**Clinical Policy:** Clinical attendance is required in order to meet clinical objectives. All clinical absences must be made up. Frequent absences may result in withdrawal from the course, which is done at the discretion of the instructor. Tardy is defined as leaving early or arriving late for a clinical rotation. Three tardies count as an absence and must be made up.

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Please reference the NDSS website for the most current information on clinical rotations and policies.

**Disaster Statement:** Check UNC Charlotte and UNC Chapel Hill's website for alerts regarding closures of the Universities. Additionally, all course materials will be available through your Moodle course site.

**Department Policies:** Course syllabi for the current academic year (Summer, Fall and Spring) are kept in a central location in each Unit office. Unit or school policies will direct the retention of syllabi beyond the current academic year. The syllabus relating to a clinical practicum or internship of a College course, undergraduate and graduate, will contain the following statement regarding student responsibility for complying with requirements of affiliation agreements.

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**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 4104: Advanced Physiological Monitoring and Data Acquisition

**Credits, Days/Time, Location:** 3 Credits; distance education

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** Students will learn advanced clinical procedures performed in clinical neurophysiology laboratories and operating rooms. Topics include evoked potentials and intraoperative neurophysiologic monitoring. Students participate in laboratory practice sessions. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3104.

**Course Objectives:** Upon completion of this course, students will

- Define principles of performing optimal evoked potential (EP) and intraoperative neurophysiologic monitoring (IONM) techniques
- Explain equipment verification, maintenance, and troubleshooting techniques for EP and IONM equipment
- Compare current issues and trends in human EP testing and IONM techniques
- Demonstrate professionalism individually and as part of a healthcare team
- Perform optimal EP and IONM procedures including patient preparation, correct utilization, maintenance, and troubleshooting of equipment, data acquisition, and reporting
- Apply optimal techniques for verification and analysis of data based on patient status
- Evaluate physiological recordings and categorize based on clinical presentation or medical condition

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.

5. Students must obtain a minimum grade of “C” for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group /team collaboration, and peer-teaching or lab experiences. The teams will be formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Web camera/microphone and high speed Internet connection  
Computer or camera capable of recording short video  
Other readings will be provided  
Note taking materials

**Evaluation Methods:**

Critical thinking/research discussion board assignments and participation (25 points)  
Module exams (35 points)  
Laboratory assignments (30 points)  
Paper/presentation (10 points)  
Total (100 points) = 100%

**Grade Scale:**

A = 91-100%  
B = 81 - 90%  
C = 71 - 80%  
D = 61 - 70%  
F = 60 and below

**Topical/Unit Outline:**

- Evoked potentials (EP)
  - Visual
    - Source and topography
    - Pattern stimulation
    - Partial-field stimulation
    - Full-field stimulation
    - Flash stimulation
  - Brainstem auditory
    - Source and topography
    - Acoustic stimulation
    - Audiometry
  - Somatosensory
    - Source and topography
    - Stimulation and recording

- Median nerve
      - Ulnar nerve
      - Peroneal nerve
      - Tibial nerve
      - Other peripheral nerves
    - Long-latency event-related
  - Intraoperative Neurophysiologic Monitoring
    - Introduction to the OR
    - Equipment verification and maintenance
    - Working with the OR team
    - Anesthesia and the technologists role
    - Spinal cord monitoring (TCeMEP)
    - Spinal cord monitoring (SSEP)
    - Spinal nerve root monitoring (EMG)
    - Cranial nerve monitoring
    - EEG monitoring
    - Monitoring considerations in adults
    - Monitoring considerations in infants and children
-

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**Special Needs:** If you have a documented disability and require accommodation in this course, contact Disability Services, Fretwell 230, phone: 687 4355 voice/TDD) the first week of the semester. Information about available services may be found at <http://www.uncc.edu/disability-services>. Accommodations for learning will be arranged by that office and communicated to the Instructor. If you speak English as a second language, please inform the instructor.

##### **Diversity Statement:**

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Religious Accommodation: (pending final approval and wording.)  
<http://legal.uncc.edu/policies/ps-134.html>

**Clinical Policy:** Clinical attendance is required in order to meet clinical objectives. All clinical absences must be made up. Frequent absences may result in withdrawal from the course, which is done at the discretion of the instructor. Tardy is defined as leaving early or arriving late for a clinical rotation. Three tardies count as an absence and must be made up.

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Please reference the NDSS website for the most current information on clinical rotations and policies.

**Disaster Statement:** Check UNC Charlotte and UNC Chapel Hill's website for alerts regarding closures of the Universities. Additionally, all course materials will be available through your Moodle course site.

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**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 4105: Leadership in Healthcare Organizations

**Credits, Days/Time, Location:** 3 Credits; distance education

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** This course focuses on the theories and practices of leadership in health care. Global, social, legal, political, economic, and ethical issues are explored. Prerequisite: Admittance into NDSS program and a grade of C or higher in RESP 4102 and NDSS 4101.

**Course Objectives:** Upon completion of this course, students will

- Explore health care organizations and characteristics of the health care environment
- Differentiate health care delivery models
- Define and demonstrate principles of leadership
- Analyze legal and ethical issues in health care organizations
- Evaluate health care financial systems and other organizations affecting health care

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of "C" for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group/team collaboration, and peer-teaching or lab experiences. The teams will be formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Readings will be provided by your instructor

**Evaluation Methods:**

11 Quizzes (22 points)

11 Assignments (33 points)

Participation (11 points)

Group project (9 points)

4 Module exams (25 points)

Total (100 points) = 100%

**Grade Scale:**

A = 91-100%

B = 81 - 90%

C = 71 - 80%

D = 61 - 70%

F = 60 and below

**Topical/Unit Outline:**

- U.S health care delivery systems
  - Foreign health care delivery systems
  - Organizational theory
  - Globalization of health care
  - Standardization of health care
  - Legal and ethical considerations and issues
  - Creation/implementation of interdepartmental policies
  - Health care advocacy
  - Case management
  - Socialization of health care
  - Governmental health care issues
  - Legislation
  - Public presentations
  - Communication skills
  - Economic influence
  - Licensure
  - New methodologies
  - Outsourcing
  - Emerging technologies
-

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**Special Needs:** If you have a documented disability and require accommodation in this course, contact Disability Services, Fretwell 230, phone: 687 4355 voice/TDD) the first week of the semester. Information about available services may be found at <http://www.uncc.edu/disability-services>. Accommodations for learning will be arranged by that office and communicated to the Instructor. If you speak English as a second language, please inform the instructor.

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Religious Accommodation: (pending final approval and wording.)  
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**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 4406: Internship

**Credits, Days/Time, Location:** 3 Credits; M-F 8am-5pm; UNC Hospitals or other approved facility

**Faculty Information:** Mary Ellen Wells  
UNC Chapel Hill, Bondurant Hall, CB #7120  
Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** Sleep and clinical neurophysiology laboratory educational/management internship with mentoring component. Prerequisite: Admittance into the NDSS program and completion of NDSS 4101 and RESP 4102 with a grade of C or better.

**Course Objectives:** Upon completion of this course, students will

- Demonstrate proficiency in designing instruction, assessments, and evaluation systems.
- Mentor entry-level students in an educational setting
- Apply management principles in a clinical/education setting
- Adhere to and promote all professional guidelines
- Promote cultural awareness and ethical behavior in the clinical and educational setting

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of "C" for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case

studies, group /team collaboration, and peer-teaching or lab experiences. The teams will be formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Note taking materials. Reading materials may be provided by your instructor.

**Evaluation Methods:**

Midterm Exam	20%
Participation	60%
Final Exam	20%

**Grade Scale:**

- A = 91-100%
- B = 81 - 90%
- C = 71 - 80%
- D = 61 - 70%
- F = 60 and below

**Topical/Unit Outline:**

- Student and employee/employer interactions
  - Participation in the day-to-day activities of a laboratory manager/educator
  - Designing instruction in a college/continuing education setting
  - Creation, implementation, and assessment of student/employee evaluation systems
  - Student mentoring/preceptorship
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## *Appendix*

### UNIVERSITY, COLLEGE AND DEPARTMENTAL POLICIES

#### **University Policies:**

##### **Code of Student Responsibility:**

“The *UNC Charlotte Code of Student Responsibility* (the Code) sets forth certain rights and responsibilities in matters of student discipline. The Code defines these responsibilities and guarantees you certain rights that ensure your protection from unjust imposition of disciplinary penalties. You should familiarize yourself with the provisions and procedures of the Code” (Introductory statement from the UNC Charlotte brochure about the Code of Student Responsibility). The entire document may be found at this internet address: <http://www.legal.uncc.edu/policies/ps-105.html>.

##### **Academic Integrity:**

Students have the responsibility to know and observe the requirements of The UNC Charlotte Code of Student Academic Integrity. This code forbids cheating, fabrications, or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Academic evaluations in this course include a judgment that the student’s work is free from academic dishonesty of any type; and grades in this course therefore should be and will adversely affected by academic dishonesty. Students who violate the code can be expelled from UNC Charlotte. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction in the course grade. In almost all cases the course grade is reduced to F. Copies of the code can be obtained from the Dean of Students Office or <http://www.uncc.edu/dos/judicial.htm>. Students are expected to report cases of academic dishonesty to the course’s instructor.

**Special Needs:** If you have a documented disability and require accommodation in this course, contact Disability Services, Fretwell 230, phone: 687 4355 voice/TDD) the first week of the semester. Information about available services may be found at <http://www.uncc.edu/disability-services>. Accommodations for learning will be arranged by that office and communicated to the Instructor. If you speak English as a second language, please inform the instructor.

##### **Diversity Statement:**

UNC Charlotte strives to create an academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

All students are required to abide by the UNC Charlotte Sexual Harassment Policy (<http://www.legal.uncc.edu/policies/ps-61.html>) and the policy on Responsible Use of University Computing and Electronic Communication Resources (<http://www.legal.uncc.edu/policies/ps-66.html>). Sexual harassment, as defined in

the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards.

Religious Accommodation: (pending final approval and wording.)  
<http://legal.uncc.edu/policies/ps-134.html>

**Clinical Policy:** Clinical attendance is required in order to meet clinical objectives. All clinical absences must be made up. Frequent absences may result in withdrawal from the course, which is done at the discretion of the instructor. Tardy is defined as leaving early or arriving late for a clinical rotation. Three tardies count as an absence and must be made up.

Any absence due to illness of three consecutive days or more requires a release signed by the physician stating the student can return to clinical without any restrictions on activities.

Any injury that could jeopardize the safety of the student and/or the client requires a release signed by the physician stating the student may return to clinical without any restrictions on activities.

Please reference the NDSS website for the most current information on clinical rotations and policies.

**Disaster Statement:** Check UNC Charlotte and UNC Chapel Hill's website for alerts regarding closures of the Universities. Additionally, all course materials will be available through your Moodle course site.

**Department Policies:** Course syllabi for the current academic year (Summer, Fall and Spring) are kept in a central location in each Unit office. Unit or school policies will direct the retention of syllabi beyond the current academic year. The syllabus relating to a clinical practicum or internship of a College course, undergraduate and graduate, will contain the following statement regarding student responsibility for complying with requirements of affiliation agreements.

*The student is responsible for complying with requirements in affiliation agreements affecting student in clinical setting experiences.*

**University of North Carolina at Charlotte**  
**College of Health and Human Services**  
**Department of Kinesiology**

**Course Number and Title:** NDSS 4107: Sleep and Neurodiagnostic Sciences Capstone

**Credits, Days/Time, Location:** 6 Credits, Writing intensive (W), distance education

**Faculty Information:** Mary Ellen Wells

UNC Chapel Hill, Bondurant Hall, CB #7120

Phone: 919-843-3673 Email: mwells@med.unc.edu

**Catalog Description:** Students complete a project and presentation culminating from the undergraduate course of study. Project topics provide students the opportunity to summarize, evaluate, and integrate knowledge gained throughout the undergraduate major. Prerequisite: Admittance into NDSS program and a grade of C or higher in NDSS 3405, NDSS 4104, NURN 4201, and NDSS 4105.

**Course Objectives:** Upon completion of this course, students will

1. Create an inventory of knowledge/skills attained throughout the undergraduate major
2. Demonstrate achievement of learning goals established by the Sleep and Neurodiagnostic Sciences program
3. Establish a practical connection between the undergraduate major and the professional world

**Course Policies:**

1. Participation and attendance are critical for success in this course. You must expect to spend a significant amount of time outside of regular scheduled class hours to complete this course.
2. All e-mails sent to the instructor must be in the format "NDSS course number *your name*".
3. There is a great deal of information to cover and the course moves at a fairly fast pace. Missed exams and quizzes cannot be made up and will result in a zero unless an approved written or typed request is given to the instructor in advance.
4. Late work is not accepted, except in extreme circumstances and must be approved by the instructor. Do not procrastinate because of possible technical problems. If you cannot keep up with the course, you should drop before the official withdrawal date.
5. Students must obtain a minimum grade of "C" for credit in the Neurodiagnostics and Sleep Science program

**Teaching Strategies:** Teaching methods may include a combination of lectures and audiovisual presentations by faculty. Student participation in discussions, demonstration of problem solving (e.g. using Excel, flow charts), critical thinking exercises, analysis of case studies, group/team collaboration, and peer-teaching or lab experiences. The teams will be

formed at the beginning of the semester. All students are expected to contribute in a meaningful way to team efforts.

**Required Texts:** Note taking materials. Reading materials may be provided by your instructor.

**Evaluation Methods:**

Participation	60%
Final Project	40%

**Grade Scale:**

- A = 91-100%
- B = 81 - 90%
- C = 71 - 80%
- D = 61 - 70%
- F = 60 and below

**Topical/Unit Outline:**

Sequence will be determined by the scope of project assigned. At the beginning of the semester, the student and instructor will complete an individualized course sequence.

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