**Course Change Proposal**

**Form A**

<table>
<thead>
<tr>
<th>Academic Group (College):</th>
<th>Academic Organization (Department):</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and Human Services</td>
<td>Physical Therapy</td>
<td>2/8/2011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Course Proposal:</th>
<th>Department Chair:</th>
<th>Submitted by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>New  <em>x</em> Change <em>x</em> Deletion ___</td>
<td>Dr. McGinty</td>
<td>Dr. McKeough</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Does this course fulfill a requirement for single-subject or multiple subject credential students?</th>
<th>For Catalog Copy:</th>
<th>Semester Effective:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ___ No <em>x</em></td>
<td>Yes <em>x</em> No ___</td>
<td>Fall <em>X</em> Spring _<strong>2012</strong></td>
</tr>
</tbody>
</table>

**This course replaces experimental course Subject Area (prefix) and Catalog Nbr (course number):**

<table>
<thead>
<tr>
<th>If changing an existing course, should new version be considered a repeat of the original version? If so, the same Course ID will be maintained. If not, a new Course ID will be assigned. Note: In PeopleSoft terminology, the Course ID is the unique system identifier, not the Catalog Nbr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ___ No ___</td>
</tr>
</tbody>
</table>

**Change from:**

<table>
<thead>
<tr>
<th>Subject Area (prefix) &amp; Catalog Nbr (course no.):</th>
<th>Title:</th>
<th>Units:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT244</td>
<td>Neurological Evaluation &amp; Treatment II</td>
<td>4</td>
</tr>
</tbody>
</table>

**Change to:**

<table>
<thead>
<tr>
<th>Subject Area (prefix) &amp; Catalog Nbr (course no.):</th>
<th>Title:</th>
<th>Units:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT 644</td>
<td>Adult Neuromuscular Patient Management II</td>
<td>4</td>
</tr>
</tbody>
</table>

**JUSTIFICATION:**

This course is being changed as part of the curriculum changes with the new DPT program required for continued accreditation for the program. The course has been upgraded to reflect the expectations in a doctoral program.

**NEW COURSE DESCRIPTION:** (Not to exceed 80 words, and language should conform to catalog copy. See http://www.csus.edu/umanual/acad.htm - Guidelines for Catalog Course Description)

This course is the second in a three course sequence focused on acquisition and integration of knowledge and skills needed to manage patients with movement dysfunctions caused by neurological damage (Referred to in the Guide as Neuromuscular Practice Patterns). Focus is on development and implementation of plans of care based on sound evaluative findings and evidence of efficacy. Case presentation, video demonstrations, and patient contact is used to develop evaluation, treatment and problem-solving skills. Open to Physical Therapy Majors Only.

**Note:**

<table>
<thead>
<tr>
<th>Prerequisite:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 633, PT 600, PT 602, PT 604, PT 606, PT 608, PT 630, PT 614, PT 618, PT 620, PT 622, PT 632, PT 634, PT 636, PT 638, PT 624, PT 625, PT 626, PT 640, PT 646</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enforced at Registration:</th>
<th>Yes <em>x</em> No ___</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Coerequisite:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT 627, PT 645, PT 648, PT 662, PT 669</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enforced at Registration:</th>
<th>Yes ___ No <em>x</em></th>
</tr>
</thead>
</table>

**Instructor Approval Required?**

| Yes ___ No _x_ |

**Course Classification (e.g., lecture, lab, seminar, discussion):**

| Lecture, Lab | C-O2; C16 |

**Title for CMS (not more than 30 characters):**

| Adult Neuromuscular Patient Management II |

**Cross Listed?**

| Yes ___ No _x_ |

| If yes, do they meet together and fulfill the same requirement, and what is the other course. |

**How Many Times Can This Course be Taken for Credit?**

| once ___ |

**Can the course be taken for Credit more than once during the same term?**

| Yes ___ No _x_ |
FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

**Description of the Expected Learning Outcomes:** Describe outcomes using the following format: “Students will be able to: 1), 2), etc.” See the example at http://www.csus.edu/aacaf/example.htm

At the completion of this course the student will be able to:

**Goal 1.0 Demonstrate Professional Effectiveness**

1.1 Compare and contrast normal biological, physiological, and psychological mechanisms of the human body with pathophysiological factors that lead to impaired body functions and structure.

1.1.1 Discuss the etiology and clinical features of major disorders.

1.1.2 Describe how pathophysiological processes affect normal function.

1.1.2.1. Compare and contrast the characteristics (voluntary strength, atrophy, response to muscle stretch, tone, abnormal movements, sensation and electrical findings) for lesions affecting the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the central nervous system and the myoneural junction.

1.1.2.2. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the somatosensory system.

1.1.2.3. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the motor system.

1.1.2.4. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the peripheral nervous system.

1.1.2.5. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the cranial nerves.

1.1.2.6. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the cerebrum.

1.1.2.7. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the blood supply of the central nervous system.

1.1.2.8. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the myoneural junction.

1.1.3 Discuss common medical/surgical treatments for major disorders.

1.1.3.1. Discuss common medical/surgical treatments for a patient client with disorders of somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply of the CNS and the myoneural junction.

1.1.4 Analyze the effects of pharmacological agents on human function.

1.2 Determine the physical therapy needs of any individual seeking services.

1.2.1 Perform an effective and efficient systems review screen.

1.2.2 Review pertinent medical records and conduct a comprehensive patient interview.

1.2.3 Carry out appropriate and comprehensive patient examinations including tests and measures in a safe and client-centered manner.

1.2.3.1. Apply knowledge of the neuroanatomy and pathophysiology of disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply of the CNS and the myoneural junction to the physical therapy evaluation.

1.2.3.2. Select and interpret the results from common measurement tools used in assessing patients/clients with disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to the physical therapy evaluation.

1.2.3.3. Perform an evaluation of a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.2.3.4. Determine the need for additional information and utilize technological search mechanisms to find that information.

1.2.4 Determine, with each patient encounter, the patient’s need for further examination or consultation.

1.2.5 Perform a physical therapy patient examination using evidenced-based tests and measures.

1.2.6 Utilize available evidence in interpreting examination findings to inform the patient evaluation.

1.2.7 Evaluate data from the patient examination (history, systems review, tests and measures) to make clinical judgments.

1.2.8 Synthesize available data on a patient using the concepts and terminology of the most recent disability/enablerment theoretical construct (currently the International Classification of Functioning, Disability, and Health (ICF) Model of Functioning and Disability).

1.2.9 Cite the evidence (patient history, diagnostic test results, tests, measures, and scientific literature) to support clinical decisions.

1.2.10 Evaluate and interpret the results of examination findings to classify the patient problem using the most recently adopted diagnostic taxonomy (currently the Guide to Physical Therapist Practice’s labels and practice patterns).

1.2.11 Integrate and evaluate data that are obtained during the examination to describe the patient condition in terms that will guide the prognosis, the plan of care and intervention strategies.

1.2.12 Identify and prioritize body function and structure impairments to determine specific activity limitations towards which interventions will be directed.

1.2.13 Make a referral to another physical therapist, other health care practitioner or agency when physical therapy is not indicated or the patient/client’s needs are beyond the skills, expertise and/or scope of practice of the physical therapist practitioner.
1.2.14 Determine the need for additional information and utilize technological search mechanisms to find that information.

1.2.15 Adapt delivery of physical therapy services with consideration for patients’ differences, values, preferences and needs.

1.3 Develop a plan of care based on the best available evidence and that considers the patient’s personal and environmental factors.

1.3.1 Prioritize patient/client problems taking into consideration the patient/client’s needs and goals, health condition, physiological and biological mechanisms within the constraints of the environment and resources.

1.3.1.1. Apply knowledge of the pathophysiology of disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to the physical therapy plan of care.

1.3.1.2. Integrate knowledge of common surgical procedures performed on clients with disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction into the physical therapy care plan.

1.3.1.3. Develop a problem list based on your evaluation of the patient/client with disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.3.1.4. Prioritize the problems list in preparation for the development of goals and the plan of care.

1.3.1.5. Based on the evaluation and in conjunction with the patient/client, design a cost-effective plan of care for a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.3.2 Write measurable, functional goals that are time referenced with expected outcomes.

1.3.3 Determine a patient prognosis by predicting the level of optimal improvement in function and the amount of time required to achieve that level.

1.3.4 Recognize barriers that may impact the achievement of optimal improvement within a predicted time frame.

1.3.5 Select and prioritize the essential interventions that are safe, meet the specified functional goals and outcomes and are patient-centered.

1.3.5.1. Evaluate the patient’s/client’s need for an assistive device and/or orthosis.

1.3.5.2. Evaluate the fit and function of an assistive device and/or orthosis.

1.3.6 Identify and collaborate with others needed in implementing the plan of care.

1.3.7 Articulate a specific rationale for referrals made to other providers.

1.3.8 Progress the plan of care by making ongoing adjustments to interventions.

1.3.8.1. Construct short and long term goals that address the problems identified in the evaluation, taking into consideration the patient’s/client’s needs and goals, pathophysiology and biological mechanisms within the constraints of the environment and resources.

1.3.9 Include in the plan of care indirect interventions, such as coordination of care, patient/family education, modifications to physical and social environments, and referral to other providers.

1.3.10 Seek and find information using contemporary technology that addresses the specific needs of the patient care plan.

1.3.11 Identify patient needs in terms of discharge planning, discontinuation of care, and transfer of care.

1.4 Implement the physical therapy plan of care designed to restore and/or maintain optimal function applying selected procedural interventions that demonstrate safe and effective psychomotor and clinical reasoning skills.

1.4.1 Perform efficient and effective procedural interventions utilizing evidence-informed physical therapy procedures in a competent manner.

1.4.1.1. Apply knowledge of the pathophysiology of disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to the therapeutic intervention.

1.4.1.2. Demonstrate a therapeutic exercise program for a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.4.1.3. Select and adjust the appropriate equipment to enhance the patient’s/client’s mobility and function in relation to the treatment goals, including, but not limited to orthotics, wheelchairs and wheelchair accessories and other durable medical equipment.

1.4.2 Modify or redirect selected procedural interventions in light of reexaminations and/or patient/client’s response to interventions.

1.4.2.1. Modify the environment (with the permission of the patient/client) to facilitate effective therapeutic intervention and optimal function.

1.4.2.2. Modify the physical therapy program in light of psychosocial and socioeconomic aspects associated with a patient/client with a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.4.2.3. Instruct a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction in the use of medical equipment.

1.4.3 Instruct the patient/client or caregiver in exercises, postures, handling techniques, home exercises consistent with patient/client diagnosis, prognosis, and expected outcomes, to facilitate patient/client progress, to maintain patient/client status, or to slow deterioration.

1.4.3.1. Teach a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to perform functional activities.

1.4.3.2. Teach the family or caregivers of a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction in
1.4.3.3. Modify the environment (with the permission of the patient/client) to facilitate effective therapeutic intervention and optimal function.

1.4.3.4. Instruct the patient’s/client’s family or caregivers in the physical management (transfers, dressing, bathing, etc.) of the patient/client.

1.4.3.5. Instruct a patient with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction in the use of medical equipment.

1.4.4 Assess patient/client progress towards goals/projected outcomes.

1.4.5 Coordinate patient/client care with other health care providers.

1.5 Demonstrate effective verbal and written communication skills with patients, families, other health care professionals, and the public, to facilitate interventions and interdisciplinary interactions and cooperation.

1.5.1 Determine appropriate documentation for the recording of patient/client information consistent with professional standards, the fiscal intermediary, and the treatment setting.

1.5.2 Produce quality documentation in a timely manner to support the delivery of physical therapy services.

1.5.3 Demonstrate thorough, concise documentation consistent with current language from the Patient Management Model contained in the most recent edition of the Guide to Physical Therapist Practice.

1.5.3.1 Prepare a written case report documenting: PT examination (including evidence for tests and measures used), PT evaluation, PT diagnosis, prognosis and plan of care (Long- and Short-term goals), intervention (including evidence for interventions used, daily notes, home evaluation, and home exercise plan), and outcomes including (intake and discharge data, and evaluation of treatment effectiveness).

1.5.4 Communicate efficiently and effectively with other health care providers involved in the patient/client’s management.

1.5.4.1 Communicate effectively with the patient/client and caregivers (2.2.1, 2.2.2, 2.2.3, & 2.2.4.)

1.5.4.2 Communicate with other members of the rehabilitation team, including but not limited to the MD, RN, OT, SLP, PTA, PT aide, psychologist, and neuropsychologist.

1.6 Utilize data from selected outcome measures to document intervention effectiveness.

1.6.1 Select relevant outcome measures for levels of body functions and structural impairments, activities, and participation with respect for their psychometric properties.

1.6.2 Collect relevant evidenced-based outcome measures that relate to patient/client goals and/or prior level of function.

1.6.3 Describe how aggregate data is analyzed to assess the effectiveness of clinical performance (interventions).

1.7 Determine an appropriate discharge, discontinuation of service, or transfer of care plan for patients/clients.

1.7.1 Re-examine patients/clients to determine if continued physical therapy services are indicated.

1.7.2 When a patient/client has reached optimal goals with physical therapy interventions and, when other related services are still needed, seek resources and/or consult with others to identify alternative resources.

1.7.3 Determine needed resources for patients/clients to ensure timely discharge, including follow-up care.

1.7.4 Discontinue care when physical therapy services are no longer indicated.

1.8 Provide consultative services applying the unique knowledge and skills of a physical therapist to identify problems, recommend solutions, or produce an outcome or product.

1.9 Engage in education activities consistent with imparting information and knowledge unique to the expertise of physical therapists to individuals or groups using relevant and effective teaching methods.

1.9.1 Promote health behaviors through educational interventions and modeling.

1.9.2 Apply basic educational concepts of teaching to the practice of physical therapy.

1.9.3 Educate colleagues and other health care professionals about the roles, responsibilities and academic preparation of the physical therapist and scope of physical therapy practice.

1.9.4 Present topics/issues using current evidence and sound teaching principles (i.e. case studies, in-service, journal article review, etc).

1.10 Demonstrate the ability to plan, organize, administer, direct, and supervise human and fiscal resources for physical therapy practice management, including:

1.10.1 Billing and reimbursement.

1.10.2 Electronic medical records documentation.

1.10.3 Contemporary electronic communication.

1.10.4 Direction and supervision of support personnel, including Physical Therapist Assistants (PTAs) and aides.

1.10.5 Patient rights, consent, confidentiality and the Health Information Portability and Privacy Act (HIPPA).

Goal 2.0 Demonstrate Professional Behaviors

2.1 Recognize cultural, ethnic, age, economic, and psychosocial differences and apply a humanistic and holistic approach to the delivery of a clinical service.

2.1.1 Practice physical therapy demonstrating cultural competence with all individuals and groups.

2.1.2 Work effectively with challenging patients.

2.1.3 Respect personal space of patients/clients and others.

2.1.4 Demonstrate behaviors that are non-judgmental with regards to patients/clients’ lifestyles.

2.1.5 Respect roles of support staff and delegate appropriately.

2.2 Communicate effectively for varied audiences and purposes.

2.2.1 Demonstrate effective interpersonal (verbal, nonverbal, electronic) communication skills considering the diversity of populations and environments.

2.2.2 Facilitate therapeutic communication and interpersonal skills.
Discuss difficult issues with sensitivity and objectivity.
Appropriately utilize communication technology efficiently, professionally, and effectively.
Respect roles of support staff and communicate appropriately.

Participate in professional activities that serve the community and advance the profession of physical therapy.
Participate in community service activities.
Recognize the importance of participation in professional association activities.
Recognize one's role as a member and leader of the healthcare team.
Promote participation in clinical education.

Recognize the need for personal and professional development.
Participate in self-assessment to improve clinical and professional performance.
Welcome and seek new learning opportunities.
Assume responsibility for professional lifelong learning.
Accept responsibility and demonstrate accountability for professional decisions.
Recognize one's own biases and suspend judgments based on biases.

Demonstrate entry level generic abilities, including:
Professional accountability and commitment to learning.
Recognition of one's own limitations.
Effective use of constructive feedback.
Effective use of time and resources.
Demonstrate integrity, compassion, and courage in all interactions.

### Goal 3.0: Practice in an Ethical and Legal Manner

Practice physical therapy in a manner consistent with established legal and professional standards.
Demonstrate awareness of and adherence to state licensure regulations.
Practice within all applicable regulatory and legal requirements.
Demonstrate the ability to search and find information about laws and regulations pertaining to physical therapy practice from state and federal electronic sources.
Demonstrate accountability by adhering to laws and regulations governing physical therapy fiscal management.

Practice in a manner consistent with the professional code of ethics.
Demonstrate knowledge and application of ethical decision-making.
Treat patients/clients within scope of practice, expertise and experience.
Seek informed consent from patients/clients.

### Goal 4.0: Demonstrate Scholarship

Apply basic principles of statistics and research methodologies within the practice of physical therapy.
Formulate and reevaluate positions based on the best available evidence.
Evaluate the efficacy and efficiency of physical therapy procedural interventions.
Critically evaluate and interpret professional literature as it pertains to practice, research, and education.
Utilize contemporary technology consistently to access evidence.

Contribute to the body of knowledge of physical therapy.
Participate in, plan, and/or conduct clinical, basic, or applied research.
Disseminate the results of scholarly activities.

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.**

**Assessment Strategies:** A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

<table>
<thead>
<tr>
<th>Assessment type</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>45</td>
</tr>
<tr>
<td>Exam 2</td>
<td>45</td>
</tr>
<tr>
<td>Final examination</td>
<td>40</td>
</tr>
<tr>
<td>Assignment 1: Vestibular Anatomy</td>
<td>10</td>
</tr>
<tr>
<td>Assignment 2: Wheelchair reflections</td>
<td>10</td>
</tr>
<tr>
<td>Assignment 3: Patient care</td>
<td>40</td>
</tr>
<tr>
<td>Assignment 4: Evidence-based intervention</td>
<td>10</td>
</tr>
</tbody>
</table>

**Total** 200

**Assignments:**
Assignment 1  Vestibular anatomy is due in hard copy at the beginning of class on the assigned date
Assignment 2  A written report of reflections about the lessons learned from the wheelchair experience is due no later than 1 week after completing the assignment
Assignment 3  In groups of 2-3, students will provide 8 weeks of patient care in Mock Clinic. Half the grade for the assignment will
Assignment 4  Evidence-based Intervention. Report the intervention used in Mock Clinic based on evidence collected with a PICO question.

For whom is this course being developed?
- Majors in the Dept [X]  Majors of other Depts ___  Minors in the Dept ___  General Education ___  Other ___

Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes [X] No ___

If yes, identify program(s): DPT

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes ___ No [X]___

If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). Physical Therapy

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

<table>
<thead>
<tr>
<th>Signatures:</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Chair:</td>
<td>2-16-11</td>
</tr>
<tr>
<td>College Dean or Associate Dean:</td>
<td>2-16-11</td>
</tr>
<tr>
<td>CPSP (for school personnel courses ONLY)</td>
<td></td>
</tr>
<tr>
<td>Associate Vice President and Dean for Academic Programs</td>
<td></td>
</tr>
</tbody>
</table>

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean’s office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.

9/10/2008
CALIFORNIA STATE UNIVERSITY SACRAMENTO
College of Health and Human Services
Department of Physical Therapy

PT644 Adult Neuromuscular Patient Management II

Spring Semester

COURSE CREDIT: 4 units: 2 hours lecture, 6 hours of lab per week

LOCATION: TBA

TIME:
LECTURE: TBA
Lab: TBA

INSTRUCTOR TBA

OFFICE
OFFICE HOURS
TELEPHONE
E-MAIL

LAB INSTRUCTOR TBA

OFFICE
OFFICE HOURS
TELEPHONE
E-MAIL

COURSE DESCRIPTION
This course is the second in a three course sequence focused on acquisition and integration of knowledge and skills needed to manage patients with movement dysfunctions caused by neurological damage (Referred to in the Guide as Neuromuscular Practice Patterns). Focus is on development and implementation of plans of care based on sound evaluative findings and evidence of efficacy. Case presentation, video demonstrations, and patient contact is used to develop evaluation, treatment and problem-solving skills. Open to Physical Therapy Majors Only.

PREREQUISITES
BIO 633 Human Gross Anatomy for Physical Therapists
PT 600 Pathokinesiology
PT 602 Evidence Informed Practice I
PT 604 Principles of Human Movement
PT 606 Therapeutic Measurements & Techniques
PT 608 PT/Patient/Professional Interactions
PT 630 Pathophysiology
PT 614 Neuroscience for PTs
PT 618 Foundations for Patient Management
PT 620 Therapeutic Exercise I
PT 622 Evidence Informed Practice II
PT 632 Pharmacology for PT
PT 632 Diagnostic Imaging for PT
PT 636 Geriatrics/Gerontology for PT
PT 638 Health, Wellness, & Ergonomics in PT
PT 624 Neurological Evaluation & Treatment I
PT 625 Musculoskeletal Pt Management I
PT 626 Clinical Agents
PT 640 PT Interventions II
PT 646 Acute Care and Cardiopulmonary PT

**CO-REQUISITES**
PT 627 Physical Therapy Educator
PT 645 Musculoskeletal Patient Management II
PT 648 Health Care Delivery in Physical Therapy I
PT 669 Psychosocial Issues in Physical Therapy
PT 662 Differential Diagnosis in Physical Therapy

**REQUIRED TEXTS/REFERENCES**
1. *Int'l Standards for Neurological Classification of SCI*, ASIA, 2002. You must order this directly from ASIA, and order form is on website: http://www.asia-spinalinjury.org/ On the left choose Order Form under Publications. Follow the instructions and fill out all of the information. Pay via credit card or check. $7.50
5. Class Notes and articles as provided on the Homepage

**COURSE OBJECTIVES** (All course objectives reference the overall educational goals and outcomes of the Department of Physical Therapy.)

At the conclusion of this course, the student is expected to:

**Goal 1.0 Demonstrate Professional Effectiveness**
1.1 Compare and contrast normal biological, physiological, and psychological mechanisms of the human body with pathophysiologial factors that lead to impaired body functions and structure.
1.1.1 Discuss the etiology and clinical features of major disorders.
1.1.2 Describe how pathological processes affect normal function.
   1.1.2.1. Compare and contrast the characteristics (voluntary strength, atrophy, response to muscle stretch, tone, abnormal movements, sensation and electrical findings) for lesions affecting the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the central nervous system and the myoneural junction.
   1.1.2.2. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the somatosensory system.
   1.1.2.3. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the motor system
1.1.2.4. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the peripheral nervous system.

1.1.2.5. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the cranial nerves.

1.1.2.6. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the cerebrum.

1.1.2.7. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the blood supply of the central nervous system.

1.1.2.8. Describe the neuroanatomical structure and functioning of and the clinical implications of lesions or disorders affecting the myoneural junction.

1.1.3 Discuss common medical/surgical treatments for major disorders.
1.1.3.1. Discuss common medical/surgical treatments for a patient client with disorders of somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply of the CNS and the myoneural junction.

1.1.4 Analyze the effects of pharmacological agents on human function.

1.2 Determine the physical therapy needs of any individual seeking services.
1.2.1 Perform an effective and efficient systems review screen.
1.2.2 Review pertinent medical records and conduct a comprehensive patient interview.
1.2.3 Carry out appropriate and comprehensive patient examinations including tests and measures in a safe and client-centered manner.
1.2.3.1. Apply knowledge of the neuroanatomy and pathophysiology of disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply of the CNS and the myoneural junction to the physical therapy evaluation.
1.2.3.2. Select and interpret the results from common measurement tools used in assessing patients/clients with disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to the physical therapy evaluation.
1.2.3.3. Perform an evaluation of a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.
1.2.3.4. Determine the need for additional information and utilize technological search mechanisms to find that information.

1.2.4 Determine, with each patient encounter, the patient’s need for further examination or consultation.

1.2.5 Perform a physical therapy patient examination using evidenced-based tests and measures.

1.2.6 Utilize available evidence in interpreting examination findings to inform the patient evaluation.

1.2.7 Evaluate data from the patient examination (history, systems review, tests and measures) to make clinical judgments.

1.2.8 Synthesize available data on a patient using the concepts and terminology of the most recent disability/enablement theoretical construct (currently the International Classification of Functioning, Disability, and Health (ICF) Model of Functioning and Disability).

1.2.9 Cite the evidence (patient history, diagnostic test results, tests, measures, and scientific literature) to support clinical decisions.
1.2.10 Evaluate and interpret the results of examination findings to classify the patient problem using the most recently adopted diagnostic taxonomy (currently the Guide to Physical Therapist Practice’s labels and practice patterns).

1.2.11 Integrate and evaluate data that are obtained during the examination to describe the patient condition in terms that will guide the prognosis, the plan of care and intervention strategies.

1.2.12 Identify and prioritize body function and structure impairments to determine specific activity limitations towards which interventions will be directed.

1.2.13 Make a referral to another physical therapist, other health care practitioner or agency when physical therapy is not indicated or the patient/client’s needs are beyond the skills, expertise and/or scope of practice of the physical therapist practitioner.

1.2.14 Determine the need for additional information and utilize technological search mechanisms to find that information.

1.2.15 Adapt delivery of physical therapy services with consideration for patients’ differences, values, preferences and needs.

1.3 Develop a plan of care based on the best available evidence and that considers the patient’s personal and environmental factors

1.3.1 Prioritize patient/client problems taking into consideration the patient/client’s needs and goals, health condition, physiological and biological mechanisms within the constraints of the environment and resources.

1.3.1.1. Apply knowledge of the pathophysiology of disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to the physical therapy plan of care.

1.3.1.2. Integrate knowledge of common surgical procedures performed on clients with disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction into the physical therapy care plan.

1.3.1.3. Develop a problem list based on your evaluation of the patient/client with disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.3.1.4. Prioritize the problems list in preparation for the development of goals and the plan of care.

1.3.1.5. Based on the evaluation and in conjunction with the patient/client, design a cost-effective plan of care for a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.3.2 Write measurable, functional goals that are time referenced with expected outcomes.

1.3.3 Determine a patient prognosis by predicting the level of optimal improvement in function and the amount of time required to achieve that level.

1.3.4 Recognize barriers that may impact the achievement of optimal improvement within a predicted time frame.

1.3.5 Select and prioritize the essential interventions that are safe, meet the specified functional goals and outcomes and are patient-centered.

1.3.5.1. Evaluate the patient’s/client’s need for an assistive device and/or orthosis

1.3.5.2. Evaluate the fit and function of an assistive device and/or orthosis

1.3.6 Identify and collaborate with others needed in implementing the plan of care.

1.3.7 Articulate a specific rationale for referrals made to other providers.
1.3.8 Progress the plan of care by making ongoing adjustments to interventions.

1.3.8.1. Construct short and long term goals that address the problems identified in the evaluation, taking into consideration the patient's/client's needs and goals, pathophysiology and biological mechanisms within the constraints of the environment and resources.

1.3.9 Include in the plan of care indirect interventions, such as coordination of care, patient/family education, modifications to physical and social environments, and referral to other providers.

1.3.10 Seek and find information using contemporary technology that addresses the specific needs of the patient care plan.

1.3.11 Identify patient needs in terms of discharge planning, discontinuation of care, and transfer of care.

1.4 Implement the physical therapy plan of care designed to restore and/or maintain optimal function applying selected procedural interventions that demonstrate safe and effective psychomotor and clinical reasoning skills.

1.4.1 Perform efficient and effective procedural interventions utilizing evidence-informed physical therapy procedures in a competent manner.

1.4.1.1. Apply knowledge of the pathophysiology of disorders of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to the therapeutic intervention.

1.4.1.2. Demonstrate a therapeutic exercise program for a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.4.1.3. Select and adjust the appropriate equipment to enhance the patient's/client's mobility and function in relation to the treatment goals, including, but not limited to orthotics, wheelchairs and wheelchair accessories and other durable medical equipment.

1.4.2 Modify or redirect selected procedural interventions in light of reexaminations and/or patient/client's response to interventions.

1.4.2.1. Modify the environment (with the permission of the patient/client) to facilitate effective therapeutic intervention and optimal function.

1.4.2.2. Modify the physical therapy program in light of psychosocial and socioeconomic aspects associated with a patient/client with a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction.

1.4.2.3. Instruct a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction in the use of medical equipment.

1.4.3 Instruct the patient/client or caregiver in exercises, postures, handling techniques, home exercises consistent with patient/client diagnosis, prognosis, and expected outcomes, to facilitate patient/client progress, to maintain patient/client status, or to slow deterioration.

1.4.3.1. Teach a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction to perform functional activities.
1.4.3.2. Teach the family or caregivers of a patient/client with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction in assisting the patient/client with a home program.

1.4.3.3. Modify the environment (with the permission of the patient/client) to facilitate effective therapeutic intervention and optimal function.

1.4.3.4. Instruct the patient's/client's family or caregivers in the physical management (transfers, dressing, bathing, etc.) of the patient/client.

1.4.3.5. Instruct a patient with a disorder of the somatosensory system, motor system, peripheral nervous system, cranial nerves, cerebrum, blood supply to the CNS and the myoneural junction in the use of medical equipment.

1.4.4 Assess patient/client progress towards goals/projected outcomes.

1.4.5 Coordinate patient/client care with other health care providers.

1.5 Demonstrate effective verbal and written communication skills with patients, families, other health care professionals, and the public, to facilitate interventions and interdisciplinary interactions and cooperation.

1.5.1 Determine appropriate documentation for the recording of patient/client information consistent with professional standards, the fiscal intermediary, and the treatment setting.

1.5.2 Produce quality documentation in a timely manner to support the delivery of physical therapy services.

1.5.3 Demonstrate thorough, concise documentation consistent with current language from the Patient Management Model contained in the most recent edition of the Guide to Physical Therapist Practice.

1.5.3.1 Prepare a written case report documenting: PT examination (including evidence for tests and measures used), PT evaluation, PT diagnosis, prognosis and plan of care (Long- and Short-term goals), intervention (including evidence for interventions used, daily notes, home evaluation, and home exercise plan), and outcomes including (intake and discharge data, and evaluation of treatment effectiveness).

1.5.4 Communicate efficiently and effectively with other health care providers involved in the patient/client's management.

1.5.4.1 Communicate effectively with the patient/client and caregivers (2.2.1, 2.2.2, 2.2.3 & 2.2.4.)

1.5.4.2 Communicate with other members of the rehabilitation team, including but not limited to the MD, RN, OT, SLP, PTA, PT aide, psychologist, and neuropsychologist.

1.6 Utilize data from selected outcome measures to document intervention effectiveness.

1.6.1 Select relevant outcome measures for levels of body functions and structural impairments, activities and participation with respect for their psychometric properties.

1.6.2 Collect relevant evidenced-based outcome measures that relate to patient/client goals and/or prior level of function.

1.6.3 Describe how aggregate data is analyzed to assess the effectiveness of clinical performance (interventions).

1.7 Determine an appropriate discharge, discontinuation of service, or transfer of care plan for patients/clients.
1.7.1 Re-examine patients/clients to determine if continued physical therapy services are indicated.
1.7.2 When a patient/client has reached optimal goals with physical therapy interventions and, when other related services are still needed, seek resources and/or consult with others to identify alternative resources.
1.7.3 Determine needed resources for patients/clients to ensure timely discharge, including follow-up care.
1.7.4 Discontinue care when physical therapy services are no longer indicated.
1.8 Provide consultative services applying the unique knowledge and skills of a physical therapist to identify problems, recommend solutions, or produce an outcome or product.
1.9 Engage in education activities consistent with imparting information and knowledge unique to the expertise of physical therapists to individuals or groups using relevant and effective teaching methods.
1.9.1 Promote health behaviors through educational interventions and modeling.
1.9.2 Apply basic educational concepts of teaching to the practice of physical therapy.
1.9.3 Educate colleagues and other health care professionals about the roles, responsibilities and academic preparation of the physical therapist and scope of physical therapy practice.
1.9.4 Present topics/issues using current evidence and sound teaching principles (i.e. case studies, in-service, journal article review, etc).
1.10 Demonstrate the ability to plan, organize, administer, direct, and supervise human and fiscal resources for physical therapy practice management, including:
1.10.1 Billing and reimbursement.
1.10.2 Electronic medical records documentation.
1.10.3 Contemporary electronic communication.
1.10.4 Direction and supervision of support personnel, including Physical Therapist Assistants (PTAs) and aides.
1.10.5 Patient rights, consent, confidentiality and the Health Information Portability and Privacy Act (HIPPA).

**Goal 2.0 Demonstrate Professional Behaviors**

2.1 Recognize cultural, ethnic, age, economic, and psychosocial differences and apply a humanistic and holistic approach to the delivery of a clinical service.
2.1.1 Practice physical therapy demonstrating cultural competence with all individuals and groups.
2.1.2 Work effectively with challenging patients.
2.1.3 Respect personal space of patients/clients and others.
2.1.4 Demonstrate behaviors that are non-judgmental with regards to patients/clients' lifestyles.
2.1.5 Respect roles of support staff and delegate appropriately.

2.2 Communicate effectively for varied audiences and purposes.
2.2.1 Demonstrate effective interpersonal (verbal, nonverbal, electronic) communication skills considering the diversity of populations and environments.
2.2.2 Facilitate therapeutic communication and interpersonal skills.
2.2.3 Discuss difficult issues with sensitivity and objectivity.
2.2.4 Appropriately utilize communication technology efficiently, professionally, and effectively.
2.2.5 Respect roles of support staff and communicate appropriately.
2.3 Participate in professional activities that serve the community and advance the profession of physical therapy.
   2.3.1 Participate in community service activities.
   2.3.2 Recognize the importance of participation in professional association activities.
   2.3.3 Recognize one’s role as a member and leader of the health care team.
   2.3.4 Promote participation in clinical education.
2.4 Recognize the need for personal and professional development.
   2.4.1 Participate in self-assessment to improve clinical and professional performance.
   2.4.2 Welcome and seek new learning opportunities.
   2.4.3 Assume responsibility for professional lifelong learning.
   2.4.4 Accept responsibility and demonstrate accountability for professional decisions.
   2.4.5 Recognize own biases and suspend judgments based on biases.
2.5 Demonstrate entry level generic abilities, including:
   2.5.1 Professional accountability and commitment to learning.
      2.5.1.1 Recognition of one’s own limitations.
      2.5.1.2 Effective use of constructive feedback.
      2.5.1.3 Effective use of time and resources.
      2.5.1.4 Demonstrate integrity, compassion, and courage in all interactions.

**Goal 3.0 Practice in an Ethical and Legal Manner**
3.1 Practice physical therapy in a manner consistent with established legal and professional standards.
   3.1.1 Demonstrate awareness of and adherence to state licensure regulations.
   3.1.2 Practice within all applicable regulatory and legal requirements.
   3.1.3 Demonstrate the ability to search and find information about laws and regulations pertaining to physical therapy practice from state and federal electronic sources.
   3.1.4 Demonstrate accountability by adhering to laws and regulations governing physical therapy fiscal management.
3.2 Practice in a manner consistent with the professional code of ethics
   3.2.1 Demonstrate knowledge and application of ethical decision-making.
   3.2.2 Treat patients/clients within scope of practice, expertise and experience.
   3.2.3 Seek informed consent from patients/clients.

**Goal 4.0 Demonstrate Scholarship**
4.1 Apply basic principles of statistics and research methodologies within the practice of physical therapy.
   4.1.1 Formulate and reevaluate positions based on the best available evidence.
   4.1.2 Evaluate the efficacy and efficiency of physical therapy procedural interventions.
   4.1.3 Critically evaluate and interpret professional literature as it pertains to practice, research, and education.
   4.1.4 Utilize contemporary technology consistently to access evidence.
4.2 Contribute to the body of knowledge of physical therapy.
   4.2.1 Participate in, plan, and/or conduct clinical, basic, or applied research.
   4.2.2 Disseminate the results of scholarly activities.

**OUTCOME OBJECTIVE**
Students will leave the course with the ability to manage the physical therapy needs of a patient with multiple sclerosis, cerebellar damage, brain tumors, vestibular dysfunction, spinal cord injury, transverse myelitis, and Guillain-Barre syndrome. Patient management entails initial examination
and evaluation, developing and skillfully delivering a plan of care including assistive equipment and referral to additional healthcare professionals as needed.

**TEACHING STRATEGIES AND LEARNING ACTIVITIES**
Case-method teaching, lecture by instructors and/or guests, demonstration, instructional videos, discussion groups, role playing, reading assignments, internet assignments, multiple writing assignments, oral presentations, laboratory practice, medical record review, and patient care labs.

**ATTENDANCE**
Daily attendance and timeliness is expected. Courtesy and professional responsibility requires notification of the instructor for any absence in advance. Failure to notify the professor of an absence can result in lowering your participation grade and is considered unprofessional. Students are responsible for any missed work and may be required to complete make-up assignments.

**ACADEMIC HONESTY**
The university policy regarding academic honesty is in effect in this course and any alleged violations will be handled in accordance with the policies described in the University Catalogue. (www.csus.edu/admbus/umanual/UMA00150.htm)

**BEHAVIORAL EXPECTATIONS**
Students are responsible for appropriate behaviors as defined by the *generic abilities*. Failure to comply with behavioral expectations during class may result in a student first being warned that behavior is inappropriate, then, if inappropriate behavior continues, a student may be asked to leave a class. Repeated failure to comply with behavioral expectations can lead to failure in the course. Cell phones and beepers should be off or silent (set to vibration mode) during the class. No text messaging is permitted in class.

**SPECIAL ACCOMMODATIONS**
During the course of the year, some students may utilize prearranged accommodations. If you are a student with a learning disability, physical disability, or other special needs, please let me know as soon as possible if you need special accommodation. These kinds of confidential discussions are best handled during my office hours or by special appointment. You can expect confidentiality and cooperation regarding any circumstances and needs that have been verified through the Office of Services to Students with Disabilities (SSWD) Lassen Hall 1008, (916) 278-6955.

**ASSESSMENT**

<table>
<thead>
<tr>
<th>Assessment type</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>45</td>
</tr>
<tr>
<td>Exam 2</td>
<td>45</td>
</tr>
<tr>
<td>Final examination</td>
<td>40</td>
</tr>
<tr>
<td>Assignment 1: Vestibular Anatomy</td>
<td>10</td>
</tr>
<tr>
<td>Assignment 2: Wheelchair reflections</td>
<td>10</td>
</tr>
<tr>
<td>Assignment 3: Patient care</td>
<td>40</td>
</tr>
<tr>
<td>Assignment 4: Evidence-based intervention</td>
<td>10</td>
</tr>
</tbody>
</table>
EXAMS
There are 3 scheduled exams for this course. For excused absences ONLY, make-up exams are available through the University Testing Center with a 10 point penalty due to the additional study time.

ASSIGNMENTS: Without prior approval, late assignments are not accepted and a score of 0 is entered for the assignment. (See details in Assignments Folder on course Homepage)
Assignment 1: Vestibular anatomy is due in hard copy at the beginning of class on the assigned date.
Assignment 2: A written report of reflections about the lessons learned from the wheelchair experience is due no later than 1 week after completing the assignment.
Assignment 3: In groups of 2-3, students will provide 8 weeks of patient care in Mock Clinic. Half the grade for the assignment will come from a practical exam and half from an individual written report.
Assignment 4: Evidence-based Intervention. Report the intervention used in Mock Clinic based on evidence collected with a PICO question.

GRADING SCALE

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93 – 100%</td>
<td>186-200</td>
</tr>
<tr>
<td>A-</td>
<td>90 – 92%</td>
<td>180-185</td>
</tr>
<tr>
<td>B+</td>
<td>87 - 89%</td>
<td>174-179</td>
</tr>
<tr>
<td>B</td>
<td>83 – 86%</td>
<td>166-173</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 82%</td>
<td>160-165</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79%</td>
<td>154-159</td>
</tr>
<tr>
<td>C</td>
<td>73 – 76%</td>
<td>146-153</td>
</tr>
<tr>
<td>C-</td>
<td>70 – 72%</td>
<td>140-145</td>
</tr>
<tr>
<td>D</td>
<td>60 - 69%</td>
<td>120-139</td>
</tr>
<tr>
<td>F</td>
<td>59% &amp; below</td>
<td>≤ 119</td>
</tr>
</tbody>
</table>

Please note that this syllabus may be changed at any time at the discretion of the Instructor with prior notification of student.

PT644 Neurological Evaluation & Treatment II
Course Schedule

<table>
<thead>
<tr>
<th>Wk</th>
<th>Day/ Date</th>
<th>Lecture</th>
<th>Reading &amp; Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>W Sep 1</td>
<td>Course Intro Intro to MS and SCI</td>
<td>Course Syllabus and Schedule</td>
</tr>
<tr>
<td></td>
<td>F Sep 3</td>
<td>Multiple Sclerosis</td>
<td>Lecture slides O&amp;S: Ch 19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Modified Fatigue Im</td>
</tr>
<tr>
<td>2</td>
<td>W Sep 8</td>
<td>Multiple Sclerosis (Cont)</td>
<td>MS: Special Topics folder MS Strengthening, MS Fatigue</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Exercise prescription</td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td></td>
</tr>
</tbody>
</table>
| F Sep 10 | Cerebellum: Structure & Function | Lecture slides L-E p257-277
Clinical tests of cere MS Evaluation and t |
| 3 W Sep 15 | Brain tumors | Lecture slides Umphred Ch 23
| F Sep 17 | Vestibular System: Structure & Function | Assignment 1
Lecture slides O&S p1000-03; L-E p395-402|
| 4 W Sep 22 | Vestibular dysfunction | O&S: Ch 24
L-E p410-415
Evaluation & treatment dysfunction |
| F Sep 24 | | Patient Care 1 |
| 5 W Sep 20 | Exam 1 (8:00-10:00) SC.A&P Review Spinal Tracts | Lecture slides L-E read for spinal cord Spinal Cord Lesions (on Homepage)
Patient panel? MOVE ADVANCED |
| F Oct 1 | No Class CPTA | |
| 6 W Oct 6 | Introduction to SCI | Lecture slides O&S pp938-942 L-E p322-324
Spinal cord syndrome O&S p940-941, SCI |
| F Oct 8 | | Patient Care 2 |
| 7 W Oct 13 | SCI Examination | ASIA Evaluation |
| F Oct 15 | | Patient Care 3 |
| 8 W Oct 20 | SCI Acute care | Lecture slides O&S p953, 957-974 L-E p301-337
Lab practice |
| F Oct 22 | | Patient Care 4 |
## PT 644 Course Schedule

<table>
<thead>
<tr>
<th>Wk</th>
<th>Day/ Date</th>
<th>Lecture</th>
<th>Reading &amp; Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>W Oct 27</td>
<td>SCI inpatient</td>
<td>Lab practice</td>
</tr>
<tr>
<td></td>
<td>F Oct 29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>W Nov 4</td>
<td><strong>Exam 2 (8:00-10:00)</strong> Functional Rehab</td>
<td>O&amp;S p 975-978</td>
</tr>
<tr>
<td></td>
<td>F Nov 5</td>
<td></td>
<td>Lab practice</td>
</tr>
<tr>
<td>11</td>
<td>W Nov 10</td>
<td>SCI Inpatient/ Out patient Wheelchair fitting &amp; skills</td>
<td>W/C skills</td>
</tr>
<tr>
<td></td>
<td>F Nov 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F Nov 19</td>
<td></td>
<td>Lab practice</td>
</tr>
<tr>
<td>13</td>
<td>W Nov 24</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F Nov 26</td>
<td><strong>No Class Thanksgiving</strong></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>W Dec 1</td>
<td>Gait training after SCI</td>
<td>Gait training after</td>
</tr>
<tr>
<td></td>
<td>F Dec 3</td>
<td>Transverse myelitis and Guillain Barre syndrome</td>
<td>Transfers ↔ floo SCI pot pori</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Written case report due Lecture slides L-E p332, p47-48</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>W Dec 8</td>
<td>Functional Outcomes and D/C Planning Treatment planning</td>
<td>Expected Outcome After Complete SCI Functional Outcome by Neurological Level</td>
</tr>
<tr>
<td></td>
<td>F Dec 10</td>
<td>Functional Outcomes and D/C Planning Patient case practice</td>
<td>Expected Outcome After Complete SCI Functional Outcome by Neurological Level</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Goal setting and Treatment planning</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td><strong>Final Exam: SCI Treatment</strong></td>
<td>Goal setting and Clinical reasoning Patient case prac</td>
</tr>
</tbody>
</table>

L-K, Lundy-Ekman, Neuroscience Fundamentals for Rehabilitation, 3rd Ed, Saunders, 2007  
Lecture slides and reference material available on the Course Homepage

Please note this schedule is subject to change as needed at the discretion of the Instructor.
PT 644 Adult Neuromuscular Patient Management II  
Assignment 3 Patient Care

<table>
<thead>
<tr>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>As part of the laboratory component of this course, groups of students will</td>
<td>be responsible for the PT treatment of an individual who has movement disfunction due to neurological damage. Patient care is intended to parallel the didactic component of the course and provide opportunities to integrate and apply information. Within each treatment group, each student is responsible for managing one long-term, movement related outcome goal for the patient.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management entails</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identifying a desired functional outcome (goal) based on the impairment and disability findings from evaluation together with the desires of the patient and family</td>
<td></td>
</tr>
<tr>
<td>2. Designing and conducting a plan of care to achieve the goals, short- and long-term</td>
<td></td>
</tr>
<tr>
<td>3. Producing and maintaining appropriate documentation of the plan of care (patient consent form, initial evaluation results, daily notes, discharge summary, and home evaluation)</td>
<td></td>
</tr>
<tr>
<td>4. Submitting a written case report (see details below)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objectives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will demonstrate competence in managing and reporting a simplified patient case. Specifically, students will:</td>
<td></td>
</tr>
<tr>
<td>1. Perform an initial evaluation</td>
<td></td>
</tr>
<tr>
<td>2. Develop an appropriate long-term goal with intervening short-term goals</td>
<td></td>
</tr>
<tr>
<td>3. Develop and skillfully execute a treatment plan to achieve these goals</td>
<td></td>
</tr>
<tr>
<td>4. Perform a home evaluation</td>
<td></td>
</tr>
<tr>
<td>5. Develop and teach the client/family a home exercise program</td>
<td></td>
</tr>
<tr>
<td>6. Produce a written case report</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conducting a treatment plan is defined as follows</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Each group is responsible for scheduling 8 sessions (7 patient care sessions plus a home evaluation)</td>
<td></td>
</tr>
<tr>
<td>2. Producing and maintaining all appropriate documentation (in the proper format)</td>
<td></td>
</tr>
<tr>
<td>3. Submitting a case report following discharge</td>
<td></td>
</tr>
<tr>
<td><strong>All evaluation and treatment sessions, excluding the home visit, must be conducted in the department under faculty supervision.</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The case report must include the following elements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A signed patient consent form (one copy per treatment group)</td>
<td></td>
</tr>
<tr>
<td>2. Medical diagnosis and pertinent personal information (one copy per treatment group)</td>
<td></td>
</tr>
<tr>
<td>3. Past medical history and history of current illness (including current medications and reasons, one copy per treatment group)</td>
<td></td>
</tr>
<tr>
<td>4. Initial PT examination and evaluation (including the appropriate Guide Pattern)</td>
<td></td>
</tr>
<tr>
<td>5. Daily notes (for each student individually)</td>
<td></td>
</tr>
<tr>
<td>6. One functional goal (LTG)</td>
<td></td>
</tr>
<tr>
<td>7. A list of impairments influencing the goal (using the table seen below)</td>
<td></td>
</tr>
<tr>
<td>8. Two levels of data must be kept (Functional Limitation, and Impairment) and reported in a pre vs. post design. (using the table seen below)</td>
<td></td>
</tr>
<tr>
<td>9. A critical analysis explaining treatment results</td>
<td></td>
</tr>
<tr>
<td>10. A documented home evaluation (one per treatment group)</td>
<td></td>
</tr>
<tr>
<td>11. A copy of the home exercise plan developed for the patient</td>
<td></td>
</tr>
</tbody>
</table>

All written case reports are individual – no combined reports from teams of students

<table>
<thead>
<tr>
<th>Evaluation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient care accounts for 40 of 200 points in the course:</td>
<td></td>
</tr>
<tr>
<td>• Evaluation and treatment activities (lab skills practical)</td>
<td>50%</td>
</tr>
<tr>
<td>• Written case report</td>
<td>50%</td>
</tr>
</tbody>
</table>


### Components of practical examination

During the last weeks of patient care, students are responsible for scheduling their skills eval with the supervising faculty. Students will plan 20 minutes of treatment activities to be evaluated by the faculty. Both **evaluation** and **2 treatment** activities must be included. Evaluation will be based on:

1. **Selection of appropriate techniques**
2. **Skillful execution of the selected techniques (productive of the desired outcome)**
3. **Appropriate modification of the technique as needed**

### Case Report Submission

A hard copy of the case report should be submitted to the clinical instructor.

### Due date

No later than 2 weeks following discharge

---

**Example of Data Segment of Case Report**

**LTG:** Return to work (part time), resume bowling, and household chores (IADLs)

Impairments influencing goal: decreased strength, decreased ROM, decreased endurance, and pain

<table>
<thead>
<tr>
<th>Impairments</th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased strength</td>
<td>Quads, glutes at least 3+ by function (see sit → std) R grip: unable to hold bowling ball</td>
<td>Quads, glutes &gt; 3+ by function (see sit → std) R grip: able to hold bowling ball</td>
</tr>
<tr>
<td>Decreased ROM</td>
<td>R gh jt: ER = 0° Hypertext = 5°</td>
<td>R gh jt: ER = 10° Hypertext = 25°</td>
</tr>
<tr>
<td>Decreased endurance</td>
<td>6MWT = 367’ with QC</td>
<td>6MWT = 1168’ with SPC</td>
</tr>
<tr>
<td>Pain</td>
<td>R gh jt = 5/10 at rest</td>
<td>R gh jt = 3/10 after bowling</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity Limitation</th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited transfers</td>
<td>Sit → std x 3 pushing with arms</td>
<td>Sit → std x 5 without arms</td>
</tr>
<tr>
<td>Limited ambulation</td>
<td>Amb 60° before rest stop 2° severely inefficient hemiplegic gait pattern</td>
<td>Amb 100° before rest stop with ↑ WB involved LE, step-through gait pattern</td>
</tr>
<tr>
<td>Limited balance</td>
<td>Std reach = 8’ 1-leg stance R leg EO: 6 sec</td>
<td>Std reach = 15’ 1-leg stance R leg EO: 26 sec</td>
</tr>
<tr>
<td>Not able to take out trash</td>
<td>Strength, balance insufficient to carry trash to curb</td>
<td>Able to push rolling trash can to curb</td>
</tr>
<tr>
<td>Not able to work</td>
<td>Insufficient ambulation, endurance, cognition to work</td>
<td>Failed to return to work 2° insufficient cognition to work</td>
</tr>
<tr>
<td>Not able to bowl</td>
<td>Strength, endurance, and balance insufficient to deliver ball</td>
<td>Able to bowl 1 game with shortened approach</td>
</tr>
</tbody>
</table>
PT Diagnosis:

Long-term goal:

<table>
<thead>
<tr>
<th></th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name ________________________________

Read all choices and choose the one best answer (record it on both your test and Scantron sheet)

**Spinal Cord Injury**

1. Which of the following is not a function of the spinal cord?
   A. transmit ascending and descending information to and from the brain
   B. perceiving the meaning of sensory data
   C. control the sensory and motor functions (somatic and visceral) of restricted regions of the body
   D. independently control simple and complex motor behaviors

2. What is the most common cause of traumatic spinal cord injury?
   A. motor vehicle accidents
   B. falls
   C. assaults
   D. sports injuries

3. According to data collected in the National Spinal Cord Injury Database, in which of the following groups does spinal cord injury occur most commonly?
   A. men between the ages of 16 and 30
   B. men between the ages of 25 and 40
   C. women between the ages of 16 and 30
   D. women between the ages of 25 and 40

4. Which of the following impairments is not common following a spinal cord injury?
   A. impaired temperature control
   B. impaired cognition
   C. impaired bowel and bladder control
   D. impaired sensation

5. Which of the following statements helps to explain why most traumatic lesions occur between C5-C7 or T12-L2?
   A. the spinous process of thoracic vertebrae extend three segments below the vertebral body
   B. the spinal cord includes cervical and lumbar enlargements
   C. stable spine segments are adjoined by mobile segments
   D. B and C

6. The neurologic level of injury is defined as the:
   A. level of vertebral fracture
   B. most caudal segment of the spinal cord with functional strength and normal sensation on both sides
   C. level at which the spinal cord and vertebral column coincide
   D. level at which motor and sensory findings are in agreement on both sides

7. The mechanism of most spinal cord injuries is:
   A. mechanical trauma due to gun shot wound
   B. ischemia
   C. trauma due to fracture and dislocation of the vertebral column
   D. hemorrhage due to irruption of metastatic lesion
8. Which of the following is not a common cause of autonomic dysreflexia?  
   A. catheterization  
   B. vigorous enema  
   C. urinary tract infection  
   D. respiratory infection

9. Autonomic dysreflexia typically occurs in patients with:  
   A. lesions at C5 and above  
   B. lesions at T6 and above  
   C. lesions at L5 and above  
   D. cauda equina lesions

10. Which of the following is not a predictor of a good outcome following SCI?  
    A. early administration of corticosteroids  
    B. early progressive return of function  
    C. early appearance of reflex activity  
    D. early resolution of spinal shock

11. Following SCI, allowing some muscles to tighten/shorten may improve function. For example, in patients with tetraplegia allowing tightness to develop in the:  
    A. hip flexors will help with sitting balance  
    B. long finger flexors will allow a tenodesis grip  
    C. ankle plantar flexors will provide stability for transfers  
    D. hip extensors will help provide stability for dressing

12. Which of the following is the most common major medical complication following SCI?  
    A. urinary tract infection  
    B. pressure sores  
    C. DVT, phlebitis, thrombophlebitis  
    D. pneumonia

13. Which of the following is not a typical neurologic problem of clients with a spinal cord injury?  
    A. impaired problem solving  
    B. cardiorespiratory problems  
    C. bowel and bladder dysfunction  
    D. impaired temperature regulation

14. Which of the following characterizes cauda equina injuries?  
    A. lower motor neuron signs  
    B. impairments generalized below the lesion level  
    C. sparing of light touch, position, and vibration sense  
    D. spasticity, hyperreflexia, and clonus

15. Which spinal cord injury results in the following symptoms: motor deficits more severe than sensory deficits; UE involvement greater than LE (excellent potential for ambulation); and sacral sparing.  
    A. Brown-Sequard (hemisection)  
    B. anterior cord syndrome  
    C. central cord syndrome  
    D. cauda equina syndrome

16. Which spinal cord injury results in the following symptoms: impairment of light touch, proprioceptive and voluntary movement on one side with impaired of pain and temperature sensation on the other side.  
    A. Brown-Sequard (hemisection)  
    B. anterior cord syndrome  
    C. central cord syndrome  
    D. cauda equina syndrome
17. Which spinal cord injury results in the following symptoms: bilateral loss of motor function and pain and temperature sense with preservation of proprioception.
   A. Brown-Séguard (hemisection)
   B. anterior cord syndrome
   C. central cord syndrome
   D. cauda equina syndrome

18. Which spinal cord injury results in the following symptoms: areflexic bowel and bladder with incomplete motor and sensory impairments in a dermatomal/myotomal distribution in the lower extremity, unilaterally.
   A. Brown-Séguard (hemisection)
   B. anterior cord syndrome
   C. central cord syndrome
   D. cauda equina syndrome

19. You receive a referral for a patient with a SCI. When you go to his room, he is in a halo device. Halo devices are:
   A. typically used to immobilize cervical fractures; patients with halos are usually on bedrest for 3-4 weeks until the fracture begins to heal.
   B. typically used to immobilize thoracic fractures; patients with halos are usually on bedrest for 3-4 weeks until the fracture begins to heal.
   C. typically used to immobilize cervical fractures; in general, halo devices allow an earlier progression to upright activities and involvement in rehabilitation.
   D. typically used to immobilize thoracic fractures; in general, halo devices allow an earlier progression to upright activities and involvement in rehabilitation.

20. Which of the following represent the most severe, acute, life-threatening condition for a patient with SCI?
   A. pneumonia
   B. decubitus
   C. urinary tract infection
   D. autonomic dysreflexia

21. Following SCI, allowing some muscles to tighten/shorten may improve function. For example, in patients with tetraplegia allowing tightness to develop in the:
   A. hip flexors will help with sitting balance
   B. hip extensors will help relieve back pain
   C. ankle plantar flexors will provide stability for transfers
   D. lumbar spine will provide stability for bed mobility and transfers

22. When sitting in their wheelchairs, patients with spinal cord injury should do pressure relief for 10-15 seconds every:
   A. 10 minutes
   B. 20 minutes
   C. 1-2 hours
   D. 3-4 hours

23. Which of the following is the best predictor of a poor outcome (life satisfaction) following SCI?
   A. Number of medical complications
   B. Injury level
   C. Age at injury
   D. Injury duration

24. Which of the following is not true about spinal shock?
   A. is due to inflammation at the injury site
   B. usually includes areflexia, flaccidity, loss of all sensation below the lesion level
   C. usually lasts approximately 24 hours
   D. early resolution is a prognosis of a bad outcome
25. The lesion shown here would cause which of the following signs and symptoms?
   A. absence of discriminative touch, conscious proprioception and vibration in the UE on the side of the lesion
   B. absence of discriminative touch, conscious proprioception and vibration in the UE on the side opposite the lesion
   C. absence of discriminative touch, conscious proprioception and vibration in the LE on the side of the lesion
   D. absence of discriminative touch, conscious proprioception and vibration in the LE on the side opposite the lesion

26. The lesion shown here would cause which of the following signs and symptoms?
   A. absence of pain and temperature sensation from the L4 dermatome, contralateral to the lesion
   B. absence of discriminative sensation from the L4 dermatome, ipsilateral to the lesion (L) dorsal horn
   C. absence of all sensation from the L4 dermatome, ipsilateral to the lesion
   D. absence of all sensation from below the level of the lesion ipsilateral to the lesion

27. The lesion shown here would cause which of the following signs and symptoms?
   A. inability to perform fractionated movements of the ipsilateral hand
   B. flaccid paralysis of the ipsilateral trunk and shoulder
   C. flaccid paralysis, areflexia, atrophy, fasciculations and fibrillations generalized below the level of the lesion
   D. spastic paralysis, hyperreflexia, and clonus of the ipsilateral hand

28. The lesion shown here would cause which of the following signs and symptoms?
   A. absence of all sensation in the T4 dermatome, bilaterally
   B. inability to sense pain below T4 on the contralateral side
   C. absence of deep tendon reflexes, bilaterally
   D. inability to sense pain or temperature in the T4 dermatome, bilaterally

29. The lesion shown here would cause which of the following signs and symptoms?
   A. absence of unconscious proprioception in the LE, on the same side as the lesion
   B. inability to sense pain or temperature below the level of the lesion, on the side opposite the lesion
   C. flaccid paralysis, areflexia, atrophy, fasciculations and fibrillations generalized below the level of the lesion, on the same side as the lesion
   D. spastic paralysis, hyperreflexia, (+) Babinski, and clonus generalized below the level of the lesion, on the same side as the lesion
30. The lesion shown here would cause which of the following signs and symptoms?
   A. flaccid paralysis, areflexia, atrophy, fasciculations and fibrillations generalized below the level of the lesion, on the same side as the lesion
   B. inability to sense pain or temperature generalized below the lesion, on the side opposite the lesion
   C. inability to sense pain or temperature at the level of the lesion, on the side opposite the lesion
   D. inability to perform fractionated movements with the ipsilateral hand

31. The lesion shown here would cause which of the following signs and symptoms?
   A. absence of all sensory, motor, and visceral function in the T10 dermatome, myotome, and sclerotome on the side of the lesion
   B. absence of all sensory, motor, and visceral function in the T10 dermatome, myotome, and sclerotome on the side opposite the lesion
   C. lower motor neuron symptoms and signs in the T10 myotome on the side opposite the lesion
   D. inability to sense unconscious proprioception generalized below T10 on the side opposite the lesion

32. The lesion shown here would cause which of the following signs and symptoms?
   A. absence of pain and temperature sensation and absence of voluntary movement below the lesion, bilaterally
   B. absence of discriminative touch, conscious proprioception and vibration below the lesion, bilaterally
   C. absence of discriminative touch, conscious proprioception and vibration in the LE on the side of the lesion
   D. absence of pain and temperature sensation in the UE on the same side as the lesion

33. The lesion shown here would cause which of the following signs and symptoms?
   A. absence light touch, proprioception, pain and temperature sensation on the R below the lesion level and lower motor signs on the L below the level of the lesion
   B. absence light touch, proprioception, voluntary movement, pain and temperature sensation on the L below the lesion level
   C. absence of light touch, proprioceptive and voluntary movement on the R below the lesion level and absence of pain and temperature sensation on the L below the lesion level
   D. absence of light touch, proprioceptive and voluntary movement on the L below the lesion level and absence of pain and temperature sensation on the R below the lesion level
34. The lesion shown here would cause which of the following signs and symptoms?
   A. sensory impairment more severe than motor impairment; LE involvement greater than UE (poor potential for ambulation); and sacral sparing
   B. motor impairment more severe than sensory impairment; UE involvement greater than LE (excellent potential for ambulation); and sacral sparing
   C. flaccid paralysis, areflexia, atrophy, fasciculations and fibrillations generalized below the level of the lesion, on the same side as the lesion
   D. spastic paralysis, hyperreflexia, (+) Babinski, and clonus generalized below the lesion, on the same side as the lesion

35. What is the difference in effects of the same spinal injury (T10 burst Fx with displacement) in a 10 year old male versus a 20 year old male?
   A. The Neurologic level would be higher in the 10 year old
   B. The Neurologic level would be higher in the 20 year old
   C. The 10 year old has a better chance of regaining ambulation
   D. Spasticity would be worse in the 20 year old

36. Following SCI, men have difficulty fathering a child because:
   A. they lose interest in having sexual intercourse
   B. sperm count and motility are low
   C. they are incapable of penile erection
   D. they are incapable of ejaculation

37. Which of the following statements is true about the reproductive system in women following SCI?
   A. because fertility is so low following SCI, women need no longer to practice birth control
   B. following SCI women are no longer capable of sexual intercourse
   C. like all other functional systems below the lesion level, the reproductive system is no longer functional
   D. fertility, gestation, and delivery return to normal approximately six months after injury

38. For a patient with an L2 ASIA A SCI, which of the following is the most common means of managing bladder function following rehabilitation?
   A. Foley catheter
   B. surgical catheter implantation
   C. intermittent self catheterization
   D. wearing a condom catheter and leg bag

39. Which of the following is the most common means of managing bowel function for a patient with SCI following rehabilitation?
   A. a colostomy
   B. defecation returns to normal because the S-4 reflex loop remains intact below the lesion level
   C. stool softener and laxative the night before and a suppository the morning of the bowel movement
   D. stool softener and laxative one hour before and a suppository the morning of the bowel movement

40. What is the cutting-edge research question in SCI rehabilitation research today?
   A. what percent of the spinal cord must be spared before a patient can re-learn how to walk after a SCI
   B. what is the impediment preventing CNS neurons from re-establishing functional re-connections
   C. what are the ideal functional electrical stimulation parameters to cause a patient to stand and walk after SCI
   D. is the artificial intelligence driven exoskeleton the best hope for walking after SCI

41. Which of the following statements best describes an incomplete injury according to the International Standards for Neurological Classification of Spinal Cord Injury?
   A. having any sensory or motor function below the neurological level
   B. having motor but not sensory function below the neurological level
   C. having motor and/or sensory function at the S4-S5 level
   D. having motor and sensory function at the L2 - L3 junction
42. Your patient suddenly looks flushed and begins complaining of a pounding headache. You suspect these symptoms may be indicative of autonomic dysreflexia. Which of the following is an inappropriate response?
   A. lie the patient down immediately
   B. check the patient’s catheter and if it is crimped, release it
   C. check for irritating stimuli such as tight clothing or abdominal binder and remove the source of irritation
   D. seek medical attention if symptoms do not resolve

43. When doing a lateral transfer, a patient with a C6 ASIA A SCI:
   A. will use the triceps to actively extend the elbow and perform a depression transfer
   B. will not be able to extend the elbow; transfers will be done with elbow flexion by pulling on a trapeze
   C. should be able to use the anterior deltoid, pectoralis major, and biceps muscles to adduct the humerus and extend the elbow if the wrist and hand are externally rotated and fixed
   D. should be able to use the wrist extensors to substitute for triceps and extend the elbow if the wrist and hand are fixed

44. Which of the following is no longer the leading cause of death for a patient with a SCI:
   A. pneumonia
   B. renal failure
   C. septicemia
   D. pulmonary embolus

45. Which of the following is not an orthopedic complication following SCI?
   A. potential for contractures
   B. heterotopic ossification & joint ankylosis
   C. osteoporosis, hypercalcemia, & fractures
   D. muscle weakness above the lesion level

Match the KEY MUSCLES with their level of innervation according to the ISNCSCL (ASIA) eval form:

46. Finger flexors
   A. C5
47. Elbow flexors
   B. C6
48. Finger abductors
   C. C7
49. Wrist extensors
   D. C8
50. Elbow extensors
   E. T1

Match the KEY MUSCLES with their level of innervation according to the ISNCSCL (ASIA) eval form:

51. Long toe extensors
    A. L2
52. Ankle plantar flexors
    B. L3
53. Hip flexors
    C. L4
54. Ankle dorsiflexors
    D. L5
55. Knee extensors
    E. S1

Match the category of the ASIA IMPAIRMENT SCALE on the left with its best description on the right.

<table>
<thead>
<tr>
<th>ASIA</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>56.</td>
<td>A</td>
</tr>
<tr>
<td>57.</td>
<td>B</td>
</tr>
<tr>
<td>58.</td>
<td>C</td>
</tr>
<tr>
<td>59.</td>
<td>D</td>
</tr>
<tr>
<td>60.</td>
<td>E</td>
</tr>
</tbody>
</table>
Anatomy: label the structure (1 point each)