College of Health and Human Sciences

Allied Health and Communicative Disorders

Medical Laboratory Sciences

2013-2014 Assessment Plan and Status Report

Submitted by:

Jeanne M. Isabel, MLS Program Coordinator
I. General Information: B.S. in Medical Laboratory Sciences

The Medical Laboratory Sciences Program is a limited admissions program divided into pre-professional and professional phases. The pre-professional phase is normally completed by students in 2 years by taking coursework which fulfills core and distributive general education university requirements as well as preparatory tool courses in biology, chemistry, and mathematics. Students meeting the admission requirements apply for the professional phase of the program and are selected on a competitive basis to fill available positions. The MLS professional program consists of first year and second year students. The first year of the professional phase consists of campus-based coursework including student laboratory courses in all disciplines of the field. The second (last) year of the professional phase consists of a clinical internship three days each week in a hospital laboratory of affiliate organizations. Additional campus-based coursework, both online and face to face, expands upon the knowledge base from the first year courses covering all disciplines of the field. Upon successful completion of the program, graduates are eligible to take a national certification examination.

II. Learning Outcomes

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating:

1. Specific knowledge of theory underlying laboratory testing and disease correlation using analytical, interpretative, and critical thinking skills consistent with entry-level medical laboratory science practice.
2. Appropriate techniques for laboratory procedures from simple to complex including pre-analytical, analytical and post-analytical interpretation including appropriate operation and maintenance of sophisticated biomedical instrumentation
3. Commitment to all laboratory regulations, confidentiality and quality assurance practices using professional and ethical behaviors when working as a member of a diverse health care team.
4. Effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.
5. Basic knowledge and application of laboratory management skills.
6. Basic knowledge and application of research skills

III. Explanation of Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description/Target</th>
<th>Timeline</th>
<th>Person Responsible</th>
<th>Objectives Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical rotation reflection summary</td>
<td>Students complete a reflection of their experience in the hospital lab related to development of knowledge and practice in the discipline and determination of their personal growth in managing time and priorities. A rubric is used to grade the reflection summaries. Target: 80% of the students will earn a score of 22 or better out of 28 points.</td>
<td>Each semester of clinical internship</td>
<td>Faculty</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>Pre and post rotation exams</td>
<td>During the clinical practicum, students take a pre exam at the</td>
<td>Each semester of clinical</td>
<td>Faculty</td>
<td>1,2,3,4</td>
</tr>
</tbody>
</table>
AHLS 470 courses
These are not the same exam. The post exam is more comprehensive to include learning from the clinical experience. The post exam at the end of the time in the department. Number of weeks varies from 5-9 weeks. Target: 70% of the students will show improvement from the pre exam on the post exam.

<table>
<thead>
<tr>
<th>Lab Management discussions</th>
<th>Students will discuss issues related to lab management. Target: 100% participate in discussion board.</th>
<th>Spring semester online course</th>
<th>Faculty of course</th>
<th>1,3,5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Management assignments</td>
<td>Students will complete assignments related to financial management, personnel management and quality management as related to lab practice. Target: students earn 75% or better on written assignments</td>
<td>Spring semester online course</td>
<td>Faculty of course</td>
<td>1,3,5</td>
</tr>
<tr>
<td>Practical Lab exams AHLS 311, 312,313,337,345</td>
<td>Each laboratory course includes a practical exam to determine if the student has mastered lab procedures introduced in the course. Target: 80% score 70% or better on the practical exam</td>
<td>Each semester</td>
<td>Faculty of course</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Case studies</td>
<td>Students use problem solving skills either individually or in groups to interpret lab data and apply theory to answer questions related to patient scenarios. Target: 80% of student will score 80% or better on case study assignments.</td>
<td>Each semester</td>
<td>Faculty of course</td>
<td>1,2,4</td>
</tr>
<tr>
<td>Research knowledge</td>
<td>Students are introduced to research methods and design. Target: students earn 80% or better on final exam</td>
<td>Fall semester</td>
<td>Faculty of course</td>
<td>1,2,3,6</td>
</tr>
<tr>
<td>Research final project</td>
<td>Students are asked to write a research proposal. Target: students earn 75% or better on final research proposal.</td>
<td>Fall semester</td>
<td>Faculty of course</td>
<td>1,2,3,6</td>
</tr>
</tbody>
</table>

### IV. Outcomes by Method Matrix

<table>
<thead>
<tr>
<th>Program Outcomes</th>
<th>Reflection summary</th>
<th>Pre and post rotation exams</th>
<th>Management discussion</th>
<th>Management assignments</th>
<th>Practical lab Exams</th>
<th>Case studies</th>
<th>Research Design</th>
<th>Research proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Specific knowledge of theory &amp; practice</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2-Appropriate techniques for laboratory procedures</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Status Report

VI. Evidence/Available data

**Learning outcome 1**
Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating specific knowledge of theory underlying laboratory testing using analytical, interpretative, and critical thinking skills consistent with entry-level medical laboratory science practice.

- Second year students will reflect on their clinical experience by writing a reflective summary. 2012-2013 was the first year to make the reflection 5% of their total grade. A rubric was used for grading and a possible number of 28 points could have been earned. Of 150 scores for the practicum courses AHLS 470A, 470B, 460C, 470D and 470E, the cumulative number was 3835 giving an average of 25.56 for all reflections. Of the 150 submitted summaries, 8.6% were below 22.4 (80% of 28) thus 91.4% of the summaries earned more than 80% of the points. N =34

- Second year students will show more in depth understanding of laboratory testing and theory by successfully completing a pre and post rotation exam, with improved performance on the post rotation exam. An average of scores for the pre and post exams for each practicum for the last year was tallied. On an average, 80% of the students improved on the post exam. N =34

- Second year students who have had one semester of clinical experience will demonstrate understanding of issues related to many aspects of lab management. 97% of students earned 80% or better on discussions and written assignments of the lab management course. N =34

- First year students have an opportunity to practice lab techniques in student labs. A measure of their ability is the lab practical exam. 80% of students in one lab course scored 80% or better. Individual students who do not meet the goal of 70% on the practical exam will get remedial assistance. All lab courses met this goal in 2012-2013. AHLS 300= 94%, 311=94%, 312=80%, 313=86%, 337=90%, 345=97% N= 33

- First and second year students are given the opportunity to apply and interpret lab data given a case study. Students in most courses met this goal; AHLS 300=68%, 308=100%, 303= 80%, 336= 90%. N= 33

- Students are introduced to research methods and design and are asked to write a proposal. AHLS 448= 83% met 75% or better on their final research project.

*Taken together students are meeting learning outcome 1*
Learning outcome 2

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating appropriate techniques for laboratory procedures from simple to complex including pre-analytical, analytical and post-analytical interpretation including appropriate operation and maintenance of sophisticated biomedical instrumentation

- Second year students will reflect on their strength and weaknesses during the clinical experience. A new rubric will be implemented for 2013-2014 looking at knowledge development, teamwork, competency and time management, problem-solving and writing skills. Evidence will be available after the spring 2014 semester.

- Second year students will have more opportunity to practice skills with instrumentation and procedures so should have improved performance on the post rotation exam. An average of student scores for the pre and post exams for each practicum for the last year will be tallied. This is an ongoing evaluation for each cohort of students.

- A measure of first year student readiness for the clinical year is the ability to earn at least 70% on lab practical exams. Individual students who do not meet the goal of 70% on a lab practical exam will get remedial assistance from the student lab manager. All lab courses met this goal in 2012-2013. AHLS 300=94%, 311=94%, 312=80%, 313=86%, 337=90%, 345=97%

- Students will interpret lab data given a case study. Students in most courses met this goal; AHLS 300=68%, 308=100%, 303=80%, 336=90%. The data from AHLS 300 is addressed in use of results. Taken together students are meeting learning outcome 2

Learning outcome 3

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating commitment to all laboratory regulations, confidentiality and quality assurance practices using professional and ethical behaviors when working as a member of a diverse health care team.

- The students’ reflection of the clinical experience includes a summary of what the student has learned about working in health care and being part of team. Evidence is being collected this academic year.

- Post exams for each clinical rotation include questions related to laboratory regulations and quality procedures known as lab operations. For the 2012-2013 year, an average of 80% of the students improved on the post exam.

- The lab management course provides an opportunity for discussions and writing assignments related to quality assurance and laboratory regulations. 97% of students earned 80% or better on discussions and written assignments of the lab management course.

- Student will perform well on lab practical exams. 80% of students in this course scored 80% or better. Individual students who do not meet the goal of 70% on the practical exam will get remedial assistance. All lab courses met this goal in 2012-2013. AHLS 300=94%, 311=94%, 312=80%, 313=86%, 337=90%, 345=97%

- In order for students to understand aspects of research design and methods in medical laboratory science, they need to develop skills for describing regulations and quality practice, especially those students who
are able to get funding to carry out their research projects. 83% met the target of achieving 75% or better on their final research proposal in AHLS 448

**Taken together students are meeting learning outcome 3**

**Learning outcome 4**  
*Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.*

- Students demonstrate effective communication through writing skills in their reflective summary. 80% of students scored 80% or better on the summary for 2012-2013. A new rubric has been developed for the future.

- Students write lab procedures following standard formatting for AHLS 312, 300 and 308. 80% of students score 80% or better on these procedures.

- Students give oral presentations in AHLS 470C and AHLS 302. 80% of students score 80% or better on these presentations.

- First and second year student are given the opportunity to write interpretations of lab cases given data. Second year students complete this through an email case study. First year students are given a selection of cases to work on during the course. Most courses met the goal of 80% of students earning 80% or better. AHLS 300=68%, 308=100%, 303= 80%, 336= 90%.

**Taken together students are meeting learning outcome 4**

**Learning outcome 5**  
*Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating basic knowledge and application of laboratory management skills.*

- Students provide comments on discussion board. 100% of students participate on discussions for the lab management course.

- Students complete written assignments on laboratory management topics. 97% of students earned 80% or better on written assignments for this course.

**Taken together students are meeting learning outcome 5**

**Learning outcome 6**  
*Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating basic knowledge and application of research skills*

- Students in AHLS 448 are introduced to research methods and design. Written assignments are submitted and feedback given to assist with writing and understanding of the research proposal development process.

- Students submit a final project which includes a research proposal. 83% earned 75% or better on their final research proposal.

**Taken together students are meeting learning outcome 6**
VII. Identification of gaps
No gaps are identified for outcomes 1-6. Review of the rubric used for evaluation of the practicum reflection summary was revised following the first year of use. Assessment of data from graduates and employers of graduates will be evaluated with intentions to obtain more data.

VIII. Use of results
All of the methods identified are useful for understanding the learning taking place by students in the program. The self reflection during each rotation of the clinical internship is an important part of the experience. Since faculty are not able to visit sites during the internship, dependence on clinical instructors and student reporting of activities is important. The rubric for the clinical experience reflection was revised to better reflect what the student should consider when writing the summary. The new rubric has a range of points from 10-20 in five categories. We will have evidence from this rubric in 2014.

In order to assess student readiness prior to going to the clinical experience, observance of students working during laboratory activities and their performance on the lab practical is an important measure of the student’s ability to perform adequately. Faculty would like to raise expectations of student performance on practical exams of all lab courses from 70% to 80% or better. Any student who does not meet this goal will be asked to arrange to work with our student lab manager to improve areas of weakness.

Using case studies are a good way to encourage critical thinking in MLS students. Continued use of cases with an earlier due date will allow for in class discussions of the results after grading and should help improve student performance.

IX. Resources needed: none at this time

X. Assessment tools in the Appendix.
A. AHLS 470 Clinical Rotation Reflection Summary
B. AHLS 446 Rubric for grading job description and performance eval.
C. AHLS 312 – Hematology/ Hemostasis Lab PRACTICAL FINAL EXAM
D. Sample case study for AHLS 300
E. Rubric for research proposal final project.
F. Procedure grade sheet
G. Presentation grade sheet
A. AHLS 470 Clinical Rotation Reflection Summary

Student Name: _____________________ Clinical Site: ___________________________

Rotation: ___________________ Dates __________

Supervising instructor: ___________________

Guidelines for Summary

One of the MLS Program objectives is to communicate in a variety of styles, practice professional and ethical behaviors and function effectively as members of a diverse health care team. This writing assignment will be submitted at the end of each rotation during your clinical experience and is worth 5% of your overall grade. It is suggested that you keep a weekly journal to remember information to help write the final reflection. Length of the reflection will relate to the number of weeks spent in the department and for most rotations should be 2-3 pages. Immunology, Urinalysis/BF and Parasitology-Mycology are the shortest rotations and may be included in another department.

Weekly items to consider (this is not submitted weekly but may be used in your summary):
1. General thoughts and feelings about your performance (both good and bad) during the week
2. Goal for the week and evaluation of the goal
3. Personal strengths and areas for improvement

The summary must be submitted through Blackboard for the AHLS 470 course in which it applies. Please address the items listed below. Your summary may be a compilation of your weekly journaling. Refer to the rubric that will be used for grading.

1. Describe how your clinical experience provided additional knowledge/skills that supplement the theory learned in the classroom in this discipline. Give at least 2 examples of events that occurred that provided a unique and valuable learning experience.
2. Describe how your clinical experience helped with your interpersonal or teambuilding skills. List any concerns or unprofessional behavior you encountered and provide a suggestion of how the concern might be addressed. (Note: these are not shared with the clinical site)
3. Describe how the clinical experience enabled you to gain competency in your techniques, manage time, and organize work. Give at least 2 examples.
4. Describe how the clinical experience enhanced your problem-solving and critical thinking skills. Give at least 2 examples.
5. Demonstrate proper use of English writing skills through clear and concise content.

Grading Rubric for Clinical Rotation Reflection Summary

<table>
<thead>
<tr>
<th>Description</th>
<th>4</th>
<th>3</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knowledge development</td>
<td>Provides 2 good examples of experience that connects clinical and classroom theory</td>
<td>Provides 1 good example of experience that connects clinical and classroom theory</td>
<td>Identifies there was a connection between clinical and classroom but provides no examples</td>
</tr>
<tr>
<td>2. Interpersonal/Teamwork</td>
<td>Discusses a situation where you witnessed the team approach to lab work. For example, lists concerns or unprofessional behavior seen that was detrimental to teamwork and how to address it OR discusses if &amp; how your interpersonal skills have contributed to teamwork</td>
<td>Little discussion of a situation where teamwork was witnessed or if &amp; how your interpersonal skills have improved the role of the team approach to lab work</td>
<td>Does not discuss teamwork nor interpersonal skills; lists concerns and unprofessional behavior but provides no suggestions of how to address</td>
</tr>
<tr>
<td>3. Competency, time management &amp; organization of work</td>
<td>List what tests you feel you are competent in after this clinical experience and areas where there is still room for improvement. Gives 2 examples demonstrating your ability to organize work to complete in required time frame</td>
<td>Feels confident in testing and does not recognize need for improvement. Provides only 1 example of ability to manage time or organize work efficiently</td>
<td>Feels clinical experience is redundant to student lab; provides 0 examples of ability to manage time or organize your work</td>
</tr>
<tr>
<td>4. Problem</td>
<td>Discusses problem solving</td>
<td>Discusses 1 complex issue</td>
<td>Does not provide</td>
</tr>
</tbody>
</table>
### B. AHLS 446 Rubric for grading job description and performance eval.

#### Categories
- Phlebotomist
- MLS
- Supervisor
- Manager

#### Elements of a Job (Position) Description (6 pts)
- Title and Classification
- Reporting / Coordinating Relationships
- Summary Statement
- Responsibilities/ Duties/ Tasks
- Required Competencies
- Scope of Authority
- Degree of Independence
- Special Demands and Working Environment
- Minimum Education Requirements

#### Goals of Performance Evaluation (4 pts)
- Must match job description requirements.
  - Provide adequate feedback
    - Requires supervisor and employee
    - Share individual point of view
    - Begin with focus on the positive
  - Serve as basis to modify or change
    - Promote trust
    - Assist with problem-solving
  - Establish future performance and activity
    - Personal and professional goals
    - Listen actively

### C. AHLS 312 – Hematology/ Hemostasis Lab PRACTICAL FINAL EXAM

Instructions: A student may not stay at any microscope for more than 3 minutes. See time limits for other stations. Please rotate through the stations and perform the task or answer the question.

#### STATION 1 (3pts)
Operation of CellDyne 1700 hematology analyzer. Without the assistance of an instructor, run one of the EDTA samples on top of the instrument using proper identification procedures. Submit the printed report with this exam.
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STATION 2 (5 pts) (maximum time at this station: 10 min)
There are four of these stations (you only go to one)
Perform a manual WBC count. The EDTA sample has been diluted in a unopette to make a 1:100 dilution. You need to load the hemacytometer and perform a WBC count. Record the formula used and your result below.

STATION 3 (2pts)
There are two spun hematocrit tubes. (return to clay after reading)
Read both and report the average.

STATION 4 (3pts) (maximum time at this station: 5 min)
At this station you will find a Drabkins hemoglobin blank, standard and diluted EDTA specimen that is ready to be read in the spectrophotometer. Please complete the necessary readings and calculate Hgb conc. Show your calculation below.
Report the hemoglobin concentration.

STATION 5 (2pts)
At this station you will find an ESR test that is to be read. Give your result

STATION 6 (2pts)
Observe the sodium citrate tube for hemostasis testing. Is it acceptable to use? YES NO (circle one).
Explain your answer.

STATION 7 (2pts) Perform an electronic QC CoaguChek PT test for control level 2 using this device.
Report the values

STATION 8 (2pts)
Look at the DNA gel provided and the control information.
Give your interpretation of row D.

STATION 9 (1 pt) Look at the Solubility test. Is this test positive/negative (circle one)

STATION 10 (1pt) Identify the tube number that shows initial hemolysis from this osmotic fragility test.

STATION 11 (2pts) You may move the slide. Patient Data: hgb 12.3 gm/dl, hct 36%, MCV 83fl, MCH 33 pg
Name the inherited condition suggested by this peripheral blood smear.

STATION 12 (2pts) You may move the slide. Patient Data: hgb 10.3 gm/dl, hct 31%, MCV 105fl, MCH 36 pg
Look at the red blood cells on this slide and comment on their size.

STATION 13 (2pts) You may move the slide. Patient Data: hgb 7.7 gm/dl, hct 23%, MCV 65fl, MCH 24 pg
Identify the prominent abnormal RBC morphology seen on this blood smear.
What group of diseases are suggested by this blood smear finding

STATION 14 (2pts) You may move the slide.
Appearance of this cell population indicates what type of leukemia? Chronic or Acute (CIRCLE ONE)
Explain your answer.

STATION 15 (2pts) You may move the slide. Patient Data: WBC 12,000/ul, hgb 13.3 gm/dl, hct 39%, Diff 55% segs, 45% lymphs
Identify the abnormal WBC finding on this smear.
Suggest a diagnosis
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STATION 16. (2pts) DO NOT MOVE
Identify the type of cell at the pointer. ________________________________

STATION 17 (2pts) DO NOT MOVE
Identify the type of WBC at the pointer. ________________________________

STATION 18 (2pts) You may move the slide. Patient Data: WBC 22,000/ul, Diff 85% segs, 15% lymphs
Identify the abnormal WBC finding on this smear. ________________

STATION 19 (2pts) You may move the slide
Identify what you would be counting when looking at this smear. ________________

STATION 20 (2pts) You may move the slide. Patient Data: hgb 8.7 gm/dl, hct 24%, MCV 70fl, MCH 23 pg
Look at the red blood cells on this slide and comment on their size and color.

STATION 21 (2 pts) DO NOT MOVE
Identify the myeloid stage of development of the WBC seen in this field at the
pointer._____________________________

STATION 22 (2 pts) You may move the slide. Patient Data: WBC 25,000/ul, hgb 8.7 gm/dl, Diff: 35% segs, 65% lymphs.
What condition is suggested by this blood smear. ________________________________

STATION 23 (1 pt) You may move the slide
Perform a platelet estimate on this blood smear and indicate whether the platelets are increased, decreased, adequate (circle one)

STATION 24 (2pts) DO NOT MOVE
Identify the WBCs seen cells in this field ________________________________
### Case Study 1

#### History/Clinical Findings

This urine was from a 27 year old WM with severe lower back pain.

#### Laboratory Data

<table>
<thead>
<tr>
<th>Test</th>
<th>Patient Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>specific gravity</td>
<td>1.018</td>
</tr>
<tr>
<td>pH</td>
<td>5.5</td>
</tr>
<tr>
<td>glucose</td>
<td>negative</td>
</tr>
<tr>
<td>protein</td>
<td>trace</td>
</tr>
<tr>
<td>ketone</td>
<td>negative</td>
</tr>
<tr>
<td>blood</td>
<td>negative</td>
</tr>
<tr>
<td>bilirubin</td>
<td>negative</td>
</tr>
<tr>
<td>urobilinogen</td>
<td>0.2 mg/dL</td>
</tr>
<tr>
<td>nitrite</td>
<td>negative</td>
</tr>
<tr>
<td>leukocytes</td>
<td>small</td>
</tr>
<tr>
<td>sulfosalicylic acid test for protein</td>
<td>60 mg/dL</td>
</tr>
<tr>
<td>microscopic</td>
<td></td>
</tr>
<tr>
<td>WBC</td>
<td>3-5</td>
</tr>
<tr>
<td>RBC</td>
<td>11-20</td>
</tr>
<tr>
<td>epithelial cells</td>
<td>3-5</td>
</tr>
<tr>
<td>mucous strands</td>
<td>moderate</td>
</tr>
</tbody>
</table>

#### Questions

1. What results are abnormal?

2. What is the probable cause for the discrepancy in the protein tests?

3. Is there a discrepancy between the microscopic and chemical tests? If so, what and how might it be explained?

4. How would you distinguish red cells from the round form of calcium oxalate?

5. Given the clinical findings and the urinalysis results, what might this patient have?

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### E. Rubric for research proposal final project.

#### Description of the Research Proposal

The description needs to be outline in format & contain the following:

- Introduction (needs to include Statement of the purpose of the research)
- Statement of the research question
- Identify the independent and dependent variables
  - Note: if your study is descriptive in nature, provide information about the data to be gathered
- Statement of research hypothesis
  - If you are not testing a hypothesis, state the objective of your study
- Description of the target population and method of sampling
- Description of specific inclusion and exclusion criteria
- Description of the research design
- Describe three study variable you would control to limit threats to internal validity and why they need to be controlled (controlled variables)
- Explain which descriptive and/ or inferential (if appropriate) statistics you would use in your study
- References in MLA or APA style (at least 2 of your references need to be from published papers).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction (with statement of research purpose)</td>
<td>25</td>
</tr>
<tr>
<td>Statement of the research question</td>
<td>15</td>
</tr>
</tbody>
</table>
### F. Procedure Grade sheet; AHLS 312: HEMATOLOGY & COAGULATION

<table>
<thead>
<tr>
<th>Required elements</th>
<th>Y</th>
<th>N</th>
<th>1 point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Title</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Principle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Specimen collection/handling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Reagents, Supplies, Equipment</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>5) Calibration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Quality Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Step-wise directions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) Calculations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) Reporting results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) Limitations of procedure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) References</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) Review and update</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grammar/syntax/spelling: 0-3 pts
Clarity: 0-3 pts
Content: 0-4 pts
Conciseness: 0-3 pts

Comments: ____________________________________________

### G: AHLS 312: STUDENT PRESENTATION EVALUATION FORM

<table>
<thead>
<tr>
<th>Student name</th>
<th>Course number/name</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------------</td>
<td>--------------------</td>
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<table>
<thead>
<tr>
<th>Topic</th>
<th>Presentation date</th>
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Comments: ____________________________________________
<table>
<thead>
<tr>
<th>TOPIC</th>
<th>EXCELLENT (5)</th>
<th>GOOD (4)</th>
<th>AVERAGE (3)</th>
<th>POOR (2)</th>
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</thead>
<tbody>
<tr>
<td>1. Organization of Material – developed subject matter in a logical manner</td>
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<td>2. Content - depth to which subject matter was discussed</td>
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<td>3. Use of visual aids/handouts</td>
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<td>4. Ability to manage time wisely and handle questions</td>
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<td>5. Poise and creativity of presentation</td>
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<tr>
<td><strong>COLUMN TOTALS</strong></td>
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Grade/score: __________