



ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

**Higher Secondary School
Certificate (HSSC)**

Examination syllabus

**Anatomy & Physiology
XI**

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PREFACE

The Ziauddin University Examination Board (ZUEB) was established under **Sindh ACT XLI 2018**, with the primary objective of enhancing the quality of education in Sindh. ZUEB is responsible for administering examinations for the **Secondary School Certificate (SSC)** and **Higher Secondary School Certificate (HSSC)** in alignment with the most recent revisions to the **National Curriculum**, as outlined by the **Directorate of Curriculum Assessment and Research (DCAR), Sindh**. Through its ordinance, ZUEB is mandated to provide examination services for both English, Urdu, and Sindhi medium candidates from private schools across Sindh. This examination syllabus reflects ZUEB's dedication to achieving the educational goals set by the provincial authorities.

In collaboration with subject professors, ZUEB has developed a comprehensive syllabus for each subject. It is important to distinguish between the syllabus and the curriculum. The syllabus serves as a guide for both teachers and students, outlining the key areas of focus within the subject. It provides students with a clear understanding of what is expected of them in their studies and helps them prepare effectively for their exams.

This examination syllabus incorporates all cognitive outcomes derived from the **Provincial Curriculum Statement**, ensuring that assessments are both valid and reliable. While the focus is primarily on the cognitive domain, significant emphasis is placed on the application of knowledge and understanding.

The syllabus is made available to all stakeholders via the ZUEB website to assist affiliated schools in planning their teaching. It is crucial to note that the syllabus, rather than the prescribed textbook, forms the foundation of ZUEB examinations. Additionally, this syllabus supports the development of learning materials for both students and teachers. ZUEB remains committed to supporting students undertaking the SSC and HSSC courses by facilitating their learning outcomes through this detailed syllabus document.

To further assist in the learning process, ZUEB provides a dedicated **e-resource tab** on its website, offering both text-based and video content on various subjects. These 15-20 minute instructional videos, created around key subject concepts, allow students to learn at their own pace and convenience. The videos can be used as a reinforcement tool to revisit lessons already taught or as pre-lesson material. This initiative is an ongoing effort, and new videos will continue to be uploaded.

We encourage all students and educators to make the most of these resources for a more enriched and flexible learning experience.

Sincerely,

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Acknowledgement

The Pre-Nursing syllabus has been meticulously developed in alignment with the DCAR (Directorate of Curriculum, Assessment, and Research) Scheme of Studies, ensuring its relevance to contemporary educational standards while enhancing its authenticity and wider acceptance within the academic and healthcare communities. The collective efforts of the faculty members of Ziauddin University Faculty of Nursing — Ms. Fatima Ali Jawad, Ms. Anisa Bhimani, Ms. Aiman Siddiqui, Mr. Kaleem Sarfaraz, and Ms. Iqra Qureshi — with their expertise and dedication, have been instrumental in shaping this curriculum that aligns with both academic and professional standards.

We would also like to extend our heartfelt thanks to the Dean – Ms. Pamela Marshall, Principal – Ms. Sumaira Punjwanu, and Advisor – Ms. Yasmin Noorani Amarsi, College of Nursing, for their collective leadership, guidance, and unwavering support throughout the curriculum development process.

Rationale For The Reviewed Provincial Curriculum

The process of revising the National Curriculum 2006 began in August 2004, when the newly elected government of Pakistan initiated education reforms across the country. These reforms included the introduction of a new National Education Policy, a National Education Census, and a revision of curricula (Ministry of Education, 2009).

In practice, the overhaul of the secondary school curriculum began in 2006, leading to a review of the scheme of studies for classes I to XII and the revision of curricula for 25 compulsory subjects.

The 18th Amendment to the Constitution of Pakistan, enacted in 2010, significantly altered the federal-provincial relationship by abolishing the "concurrent legislative list." This amendment granted provinces greater legislative and financial autonomy in sectors such as education and health. The most notable implication of the 18th Amendment for education was the transfer of responsibility for curriculum development, syllabus planning, policy formation, and educational standards to the provinces, marking a significant step forward for education.

In Sindh, the School Education Department tasked a Curriculum Review Team with revising the National Curriculum 2006 for all subjects. The goal was to create a curriculum better suited to the needs of students and teachers while aligning with the principles of the 18th Amendment. Subject-specific curriculum review committees were established to critically examine and align the curriculum's content, both contextually and textually, ensuring coherence across various subjects. The Bureau of Curriculum (BoC) played a crucial role in organizing workshops and meetings in Hyderabad to facilitate the completion of this task. The support of numerous educationists, researchers, and teachers was invaluable in successfully revising the curriculum.

The revised National Curriculum, along with the original version, is available on the DCAR website at http://dcar.gos.pk/BoC_Other_Pages/curriculum_dev.html for easy access.

The Ziauddin University Examination Board (ZUEB) SSC and HSSC syllabi are developed in accordance with the Sindh Revised Curriculum. To date, textbooks for various subjects have been developed based on the revised curriculum.

AIMS AND OBJECTIVES:

Aims of the Anatomy & Physiology Course

- Provide students with a thorough understanding of the structure and function of the human body, focusing on the interrelationship between anatomical systems and physiological processes.
- Develop foundational knowledge that will enable students to understand normal body functions and mechanisms of homeostasis.
- Equip students with the skills to analyze the relationship between the human body's structure and its role in maintaining health and wellness.
- Prepare students for advanced studies and professional applications in healthcare, biology, and related fields.
- Foster critical thinking and problem-solving skills in understanding the physiological responses to internal and external changes.
- Emphasize the application of anatomical and physiological principles in understanding disease processes, diagnosis, and treatment.

Objectives of the Anatomy & Physiology Course

- Identify and describe the major anatomical structures of the human body, including cells, tissues, organs, and systems.
- Explain the physiological functions of body systems and how they interact to maintain homeostasis.
- Understand the levels of organization within the human body, from cellular to systemic levels.
- Describe and analyze the mechanisms of major physiological processes such as metabolism, circulation, respiration, digestion, and excretion.
- Discuss the structure and function of the musculoskeletal, cardiovascular, respiratory, nervous, endocrine, and reproductive systems.
- Relate the structure of body systems to their functions in maintaining normal body operations and adapting to changes in the internal and external environment.
- Explain the role of feedback mechanisms in regulating physiological processes.
- Recognize the importance of cellular functions, including cell division, differentiation, and their contributions to tissue formation and repair.

- Apply anatomical and physiological knowledge to understand the effects of diseases, injuries, and medical interventions.
- Demonstrate an understanding of scientific terminology related to anatomy and physiology.
- Analyze and interpret data from physiological experiments and apply theoretical knowledge to practical situations.
- Develop critical thinking skills to assess and evaluate the relationships between structure, function, and health.

ZIAUDDIN UNIVERSITY EXAMINATION BOARD
XI – ANATOMY & PHYSIOLOGY
SLOs CATEGORIZATION
Detailed Syllabus

| Unit Title | SLO | | K | U | A |
|---|------|--|---|---|---|
| 1. Introduction to the Body as a Whole | 1.1 | Define the term A&P | ✓ | | |
| | 1.2 | Understand the relationship between A&P | | ✓ | |
| | 1.3 | Define level of organization of the body | ✓ | | |
| | 1.4 | Define anatomical position | ✓ | | |
| | 1.5 | Describe the various body planes | | ✓ | |
| | 1.6 | Define the body cavities | ✓ | | |
| | 1.7 | Discuss body cavities and list the organs | | ✓ | ✓ |
| | 1.8 | Identify abdominal pelvic region & quadrant | ✓ | | |
| | 1.9 | Identify the organs present in Nine abdominal regions | ✓ | | |
| | 1.10 | Briefly discuss the importance of abdomino pelvic quadrants and regions | | ✓ | |
| 2. Homeostasis & Adaptation | 2.1 | Define the term homeostasis | ✓ | | |
| | 2.2 | Discuss the factors which affect homeostasis | | ✓ | |
| | 2.3 | Define feedback mechanism and its components | ✓ | | |
| 3. Cell, Tissues & Membranes | 3.1 | Describe the structure and functions of a cell | | ✓ | |
| | 3.2 | Discuss the process of cell division | | ✓ | |
| | 3.3 | Classify tissues into four types based on structure, location, and function <ul style="list-style-type: none"> • Epithelial tissue • Connective tissue • Muscle tissue • Nervous tissue | ✓ | ✓ | |
| 4. Skeletal System | 4.1 | Define skeletal system | ✓ | | |
| | 4.2 | Discuss the structure, types, and functions of bones | | ✓ | |
| | 4.3 | List the functions of the skeletal system | ✓ | | |
| | 4.4 | Identify the bones of axial & appendicular skeleton | ✓ | | |
| 5. The Joints | 5.1 | Define the term joint | ✓ | | |
| | 5.2 | Describe three types of joints <ul style="list-style-type: none"> • Fibrous • Cartilaginous • Synovial | | ✓ | |
| | 5.3 | Describe the common characteristic features of a synovial joint | | ✓ | |
| 6. | 6.1 | Define muscle and list the types of muscles | ✓ | | |

| Unit Title | SLO | | K | U | A |
|---------------------------------|----------------------------|--|---------------------------------------|---|---|
| Muscular System | 6.2 | Describe the location and function of major muscles <ul style="list-style-type: none"> • The neck • The face • The back • The arms • The legs | | ✓ | |
| | 7.1 | Describe the structure of two layers of skin <ul style="list-style-type: none"> • Epidermis • Dermis | | ✓ | |
| 7. Integumentary System | 7.2 | Briefly discuss the structure and function of skin derivatives <ul style="list-style-type: none"> • Sweat gland • Sebaceous gland • Hair • Nail | | ✓ | |
| | 7.3 | Briefly discuss the functions of skin <ul style="list-style-type: none"> • Protection • Regulation of body temperature • Sensation • Absorption • Excretion | | ✓ | |
| | 8.1 | Define blood and list its functions | ✓ | | |
| 8. Cardiovascular System | 8.2 | Describe the composition and functions of blood | | ✓ | |
| | 8.3 | Briefly explain the ABO blood groups and Rh factor | | ✓ | |
| | 8.4 | Describe the location, structure, and functions of the heart | | ✓ | |
| | 8.5 | Explain the structure and function of arteries, veins, and capillaries | | ✓ | ✓ |
| | 8.6 | Describe the types of blood circulation <ul style="list-style-type: none"> • Pulmonary circulation • Systemic circulation (coronary & hepatic portal circulation) | | ✓ | |
| | 9. Lymphatic System | 9.1 | Define lymph and the lymphatic system | ✓ | |
| 9.2 | | Identify the organs of the lymphatic system | ✓ | | |
| 9.3 | | Describe the general functions of the lymphatic system | | ✓ | |
| 9.4 | | Describe how lymph is formed | | ✓ | |
| 9.5 | | Describe the lymph vessels and how lymph is returned to the blood vessels | | ✓ | |
| 10. Digestive System | 10.1 | Define the digestive system and list its functions | ✓ | | |
| | 10.2 | Identify the organs of the digestive system | ✓ | | |
| | 10.3 | Describe the anatomy and physiology of digestive organs | | ✓ | |
| | 10.4 | Discuss the role of accessory organs in digestion | | ✓ | |
| | 10.5 | Discuss digestion of food | | ✓ | |
| | 10.6 | Discuss the absorption of nutrients in the digestive system | | ✓ | |

| Unit Title | SLO | | K | U | A |
|------------------------------------|------|---|---|---|---|
| | 10.7 | Discuss the process of defecation | | ✓ | |
| 11. Urinary System | 11.1 | Define the urinary system | ✓ | | |
| | 11.2 | List the organs of the urinary system | ✓ | | |
| | 11.3 | Discuss kidneys in terms of external anatomy and structure | | ✓ | |
| | 11.4 | Discuss the structure and functions of ureters, bladder, and urethra | | ✓ | |
| 12. Nervous System | 12.1 | Define the nervous system | ✓ | | |
| | 12.2 | Briefly discuss the organization of the nervous system | | ✓ | |
| | 12.3 | Describe the structure and function of a neuron | | ✓ | |
| | 12.4 | Define nerve and its types | ✓ | | |
| | 12.5 | Identify the principal parts of the brain with their functions | ✓ | ✓ | |
| 13. Special Senses | 13.1 | Describe the structure and function of the ear | | ✓ | |
| | 13.2 | Describe the physiology of hearing and balance | | ✓ | |
| | 13.3 | Describe the structure and function of the eye | | ✓ | |
| | 13.4 | Describe the physiology of sense of sight | | ✓ | |
| 14. Endocrine System | 14.1 | Define the endocrine system | ✓ | | |
| | 14.2 | Identify endocrine glands in the body | ✓ | | |
| | 14.3 | Briefly discuss the hormones and functions of endocrine glands | | ✓ | |
| 15. Reproductive System | 15.1 | Define reproduction | ✓ | | |
| | 15.2 | Define the reproductive system | ✓ | | |
| | 15.3 | List the structures and functions of male and female reproductive systems | ✓ | ✓ | |
| 16. Respiratory System | 16.1 | Define respiration | ✓ | | |
| | 16.2 | Define the respiratory system | ✓ | | |
| | 16.3 | Discuss the structure and function of respiratory organs | | ✓ | |
| | 16.4 | Discuss the mechanism of breathing | | ✓ | |
| | 16.5 | Explain the types of respiration | | ✓ | |

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XI – ANATOMY & PHYSIOLOGY

Number of SLOs by Cognitive Levels

| S. No | Topic Name | K | U | A | Total SLOs |
|-------------------|-------------------------------------|-----------|-----------|----------|-------------------|
| 1 | Introduction to the Body as a Whole | 6 | 3 | 1 | 10 |
| 2 | Homeostasis & Adaptation | 2 | 1 | 0 | 3 |
| 3 | Cell, Tissues & Membranes | 1 | 2 | 0 | 3 |
| 4 | The Skeletal System | 3 | 1 | 0 | 4 |
| 5 | The Joints | 3 | 0 | 0 | 3 |
| 6 | The Muscular System | 2 | 1 | 0 | 3 |
| 7 | Integumentary System | 2 | 2 | 0 | 4 |
| 8 | The Cardiovascular System | 3 | 2 | 1 | 6 |
| 9 | The Lymphatic System | 2 | 2 | 0 | 4 |
| 10 | The Digestive System | 4 | 3 | 0 | 7 |
| 11 | Urinary System | 3 | 1 | 0 | 4 |
| 12 | Nervous System | 3 | 2 | 0 | 5 |
| 13 | Special Senses | 2 | 2 | 0 | 4 |
| 14 | Endocrine System | 3 | 0 | 0 | 3 |
| 15 | Reproductive System | 3 | 0 | 0 | 3 |
| 16 | Respiratory System | 3 | 2 | 0 | 5 |
| Total | | 43 | 24 | 2 | 69 |
| Percentage | | 62 | 35 | 3 | 100 |

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XI – ANATOMY & PHYSIOLOGY
Table of Specifications (TOS)

| S. No | Topic Name | Weightage in Evaluation | MCQ | PBA | CRQ | ERQ |
|--------------|-------------------------------------|-------------------------|-----------|-----------|-----------|----------|
| 1 | Introduction to the Body as a Whole | 7% | 3 | 0 | 1 | 0 |
| 2 | Homeostasis & Adaptation | 7% | 1 | 2 | 1 | 0 |
| 3 | Cell, Tissues & Membranes | 6% | 1 | 1 | 1 | 0 |
| 4 | The Skeletal System | 4% | 0 | 1 | 0 | 1 |
| 5 | The Joints | 6% | 1 | 1 | 1 | 0 |
| 6 | The Muscular System | 6% | 1 | 1 | 1 | 0 |
| 7 | Integumentary System | 4% | 0 | 1 | 1 | 0 |
| 8 | The Cardiovascular System | 8% | 2 | 0 | 1 | 1 |
| 9 | The Lymphatic System | 6% | 1 | 1 | 1 | 0 |
| 10 | The Digestive System | 8% | 2 | 1 | 1 | 0 |
| 11 | Urinary System | 8% | 1 | 2 | 1 | 0 |
| 12 | Nervous System | 10% | 2 | 1 | 1 | 1 |
| 13 | Special Senses | 6% | 0 | 2 | 1 | 0 |
| 14 | Endocrine System | 4% | 1 | 0 | 1 | 0 |
| 15 | Reproductive System | 4% | 0 | 1 | 1 | 0 |
| 16 | Respiratory System | 6% | 1 | 0 | 1 | 1 |
| Total | | 100% | 17 | 15 | 15 | 4 |

**ZIAUDDIN UNIVERSITY EXAMINATION BOARD
XI – ANATOMY & PHYSIOLOGY**

SKILLS (Lab Work)

1. Identification and recognition of different bones
2. Explanation of different parts of bones
3. Explanation of different regions and quadrants, including placement of organs and their functions
4. Identification of special sense organs and their functions
5. Articulation of different joints and their movement
6. Types of bones

**ZIAUDDIN UNIVERSITY EXAMINATION BOARD
XI – ANATOMY & PHYSIOLOGY**

EQUIPMENT REQUIRED

1. A skeleton
2. Separate bones
3. Skin Model
4. Male & Female reproductive organs model
5. Charts of various systems
6. Special sense organs models – eye and ear
7. Brain model
8. Kidney model

DEFINITIONS OF COGNITIVE LEVELS

Remember

Remembering is the act of retrieving knowledge and can be used to produce things like definitions or lists. The student must be able to recall or recognise information and concepts. The teacher must present information about a subject to the student, ask questions that require the student to recall that information and provide written or verbal assessment that can be answered by remembering the information learnt.

Question Stems

- Can you name all the ...?
- Describe what happens when ...?
- How is (are) ...?
- How would you define ...?
- How would you identify ...?
- How would you outline ...?
- How would you recognise...?
- List the ... in order.
- What do you remember about ...?
- What does it mean?
- What happened after?
- What is (are) ...?
- What is the best one?
- What would you choose ...?
- When did ...?
- Where is (are) ...?
- Which one ...?
- Who spoke to ...?
- Who was ...?
- Why did ...?

Understand

The next level in the taxonomic structure is Understanding, which is defined as the construction of meaning and relationships. Here the student must understand the main idea of material heard, viewed, or read and interpret or summarise the ideas in their own words. The teacher must ask questions that the student can answer in their own words by identifying the main idea.

Question Stems

- Can you clarify...?
- Can you illustrate ...?
- Condense this paragraph.
- Contrast ...
- Does everyone think in the way that ... does?
- Elaborate on ...
- Explain why ...
- Give an example
- How can you describe
- How would you clarify the meaning
- How would you compare ...?
- How would you differentiate between ...?
- How would you describe...?
- How would you generalise...?
- How would you identify ...?
- Is it valid that ...?
- Is this the same as ...?
- Outline ...
- Select the best definition
- State in your own words
- This represents ...
- What are they saying?
- What can you infer from ...?
- What can you say about ...?
- What could have happened next?
- What did you observe?

| | |
|--|--|
| | <ul style="list-style-type: none"> • What does this mean? • What expectations are there? • What information can you infer from...? • What is the main idea of ...? • What restrictions would you add? • What seems likely? • What seems to be ...? • What would happen if ...? • What would happen if ...? • Which are the facts? • Which statements support ...? |
| <p>Apply</p> <p>The third level in Bloom’s taxonomy, Applying, marks a fundamental shift from the pre-Bloom’s learning era because it involves remembering what has been learnt, having a good understanding of the knowledge, and applying it to real-world exercises, challenges or situations. Students must apply an abstract idea in a concrete case to solve a problem or relate it to prior experience. The teacher must provide opportunities for students to use theories and problem-solving techniques in new situations and review and check their work. Assessment questions should be provided that allow students to define and solve problems.</p> <p>Question Stems</p> <ul style="list-style-type: none"> • Can you group by characteristics such as ...? • Choose the best statements that apply • Clarify why ... • Do you know of another instance where ...? • Draw a story map • Explain why a character acted in the way that he did • From the information given, can you develop a set of instructions about ...? • How could you develop ...? • How would you change ...? • How would you demonstrate...? • How would you develop ... to present ? • How would you explain ...? | <p>Analyse</p> <p>Analysing is the cognitive level where students can take the knowledge they have remembered, understood and applied, then delve into that knowledge to make associations, discernments or comparisons. Students should break down a concept or idea into parts and show relationships between these parts. Teachers must give students time to examine concepts and their requisite elements. Students are required to explain why they chose a solution.</p> <p>Question Stems</p> <ul style="list-style-type: none"> • Can you distinguish between ...? • Can you explain what must have happened when ...? • Determine the point of view, bias, values, or intent underlying the presented material • Discuss the pros and cons of ... • How can you classify ... according to ...? • How can you compare the different parts? • How can you sort the different parts...? • How is ... connected to ...? • How is ... similar to ...? • How would you categorise...? • How would you explain ? • If ... happened, what might the ending have been? • State the point of view of ... • What are some of the problems of ...? |

- How would you modify ...?
- How would you present...?
- How would you solve ... ?
- Identify the results of ...
- Illustrate the ...
- Judge the effects of ... What would result ...?
- Predict what would happen if ...
- Tell how much change there would be if ...
- Tell what would happen if ...
- What actions would you take to perform ...?
- What do you think could have happened next?
- What examples can you find that ?
- What other way would you choose to ...?
- What questions would you ask of ...?
- What was the main idea ...?
- What would the result be if ...?
- Which factors would you change if ...?
- Who do you think...?
- Why does this work?
- Write a brief outline ...
- Write in your own words ...


- What assumptions ...?
- What can you infer about...?
- What can you point out about ?
- What conclusions ...?
- What do you see as other possible outcomes?
- What does the author assume?
- What explanation do you have for ...?
- What ideas justify the conclusion?
- What ideas validate...?
- What is the analysis of ...?
- What is the function of ...?
- What is the problem with ...?
- What motive is there?
- What persuasive technique is used?
- What statement is relevant?
- What was the turning point?
- What were some of the motives behind ...?
- What's fact? Opinion?
- What's the main idea?
- What's the relationship between?
- Which events could not have happened?
- Why did ... changes occur?
- Why do you think ?

BLOOM'S TAXONOMY WITH EXAMPLES

Conclusion

If you are a teacher looking for ways to engage your students in learning, this LIST of questions might be interesting for your classroom practice. Bloom's Taxonomy question stems can help elicit higher-order thinking skills and promote critical thinking among learners at different taxonomy levels. These question stems can also encourage students to think about their knowledge through reflection before answering questions.

ACTION WORDS FOR COGNITIVE LEVELS

| Knowledge | Understand | Apply | Analyze | Evaluate | Create |
|---|--|---|--|---|---|
|  |  <small>UNDERSTAND</small> |  |  |  |  |
| define | explain | solve | analyze | reframe | design |
| identify | describe | apply | appraise | criticize | compose |
| describe | interpret | illustrate | judge | evaluate | create |
| label | paraphrase | modify | support | order | plan |
| list | summarize | use | compare | compare | combine |
| name | classify | calculate | decide | classify | formulate |
| state | compare | change | discriminate | contrast | invent |
| match | differentiate | choose | recommend | distinguish | hypothesize |
| recognize | discuss | demonstrate | summarize | infer | substitute |
| select | distinguish | discover | assess | separate | write |
| examine | extend | experiment | choose | explain | compile |
| locate | predict | relate | convince | select | construct |
| memorize | associate | show | defend | categorize | develop |
| quote | contrast | sketch | estimate | connect | generalize |
| recall | convert | complete | grade | differentiate | integrate |
| reproduce | demonstrate | construct | measure | divide | modify |
| tabulate | estimate | dramatize | predict | order | organize |
| tell | express | interpret | rank | prioritize | prepare |
| Copy | identify | manipulate | score | survey | produce |
| discover | indicate | paint | select | calculate | rearrange |

| | | | | | |
|-----------|------------|----------|--------------|------------|-------------|
| duplicate | infer | prepare | test | conclude | rewrite |
| enumerate | relate | teach | argue | correlate | adapt |
| listen | restate | act | conclude | deduce | anticipate |
| observe | select | collect | consider | devise | arrange |
| omit | translate | compute | critique | diagram | assemble |
| read | ask | explain | debate | dissect | choose |
| recite | cite | list | distinguish | estimate | collaborate |
| record | discover | operate | editorialize | evaluate | facilitate |
| repeat | generalize | practice | justify | experiment | imagine |
| retell | group | simulate | persuade | focus | intervene |
| visualize | illustrate | transfer | rate | illustrate | make |
| | judge | write | weigh | organize | manage |
| | observe | | | outline | originate |
| | order | | | plan | propose |
| | report | | | question | simulate |
| | represent | | | test | solve |
| | research | | | | support |
| | review | | | | test |
| | rewrite | | | | validate |
| | show | | | | |