Arkansas CTE

Turfgrass Management: Grades 9, 10, 11, 12

Adopted 2007

Lawn Care and Turf Production

1.1 Define turf terms

1. Match terms with definitions 1.1.1

1.2 Discuss career opportunities in the turfgrass industry and lawn care

1. Visit the Web and related sites for information on careers 1.2.1
2. Research a career in the turfgrass industry to determine educational requirements, working conditions, salary, etc. 1.2.2
3. Research a career in the sports turf industry to determine educational requirements, working conditions, salary, etc. 1.2.3
4. Research training requirements for a lawn care or sports turf professional 1.2.4

1.3 Discuss the benefits of lawns

1. Participate in a class discussion on the importance of lawns 1.3.1

1.4 Identify and describe the major parts of a typical turfgrass plant; auricle, collar, crown, leaf blade, leaf sheath, ligule, rhizome, shoot, stolon, tiller, vernation

1. Use grass morphology and reference materials to identify turfgrass species 1.4.1

1.5 List and describe the major factors affecting turfgrass growth; climatic, moisture, season length, zones, heat tolerence, light exposure, soil, (nutrients, compaction, depth, type, drainage pH)

1. Select turf grass species based on their adaptation to factors affecting growth 1.5.1

1.6 Identify and describe cool and warm season turfgrasses; Bahia grass, Bermuda grass, Centepiede grass, Fine fescues, Kentucky blue grass, Perennial rye grass, St. Augutines grass, Tall fescue, Zoysia grass

1. Classify major turfgrass species as cool or warm season grasses 1.6.1
2. List the qualities of warm and cool season turfgrasses 1.6.2

1.7 Explain how a lawn is established or rennovated; seed, sod, plug, sprig

1. Calculate a lawn area 1.7.1

1.8 Explain the practices of maintaining a lawn; aerification, fertilizing, irrigating, mowing, pest management, thatch control

1. Locate two articles about lawn care from magazines, newsletters, or Internet publications 1.8.1
2. Create a price list of lawn care products 1.8.2

1.9 Describe the types of fertilizers used on lawns; organic, inorganic, soluble, time released

1. Visit a cooperative or extension agency and listen to an explanation of fertilizer types 1.9.1

1.10 List the 16 essential nutrients required by turfgrasses

1. Recite the 16 essential elements for turfgrass growth 1.10.1

1.11 Describe the basic lawn fertilization process

1. Calibrate a rotary spreader 1.11.1
2. Collect a soil sample 1.11.2
3. Analyze soil sample for fertilizer needs 1.11.3
4. Develop a fertilizer schedule 1.11.4

1.12 Discuss and explain thatch

1. Identify thatch in a lawn 1.12.1
2. Recognize problems caused by thatch 1.12.2
3. Demonstrate how to remove thatch 1.12.3

Safety in Turfgrass Management

2.1 Define terms

1. Match terms to their definitions 2.1.1

2.2 Discuss the meaning and importance of safety and safe work in turfgrass management

1. Relate examples of safety hazards in turfgrass management, including equipment used in turf production and the inputs applied to plants such as pesticides and fertilizers 2.2.1
2. Have students name examples of accidents that have occurred locally in turfgrass management 2.2.2

2.3 Identify hazards in turfgrass management

1. Survey hazardous situations in local turfgrass management facilities and prescribe the appropriate safety measures to be taken and propose ways of eliminating or reducing the risk of these hazards 2.3.1
2. Develop a list of practices to reduce risk when working with turfgrass 2.3.2

2.4 Describe the importance of personal safety in turfgrass management

1. Identify and properly use appropriate personal protective equipment (PPE) in turfgrass management 2.4.1
2. Calculate the cost of personal protective equipment (PPE) for an individual involved in turfgrass management 2.4.2
3. Work together with others to promote safety in turfgrass management 2.4.3
4. Take a test on turfgrass management safety before beginning work on turf 2.4.4

2.5 Describe the safety practices used on or with rotary mowers

1. Participate in a discussion on the safe use of rotary mowers 2.5.1

2.6 List the safety practices used with a boom sprayer

1. Participate in a discussion on the safe use of a boom sprayer 2.6.1

Golf Course Management

3.1 Define golf course management terms

1. Match terms with definitions 3.1.1

3.2 Describe the golf course maintenance industry

1. Research the industry 3.2.1

3.3 Discuss careers in the golf course industry and career preparation; assistant superintendent, consultants, educators and researchers, golf course architects, golf course builders, golf course management crew, golf course superintendent, manufacturers, mechanic, pesticide technician, professional writers, sales representatives

1. Visit a golf course and interview the golf course superintendent or a maintenance crew leader 3.3.1
2. Outline five jobs and their responsibilities in golf course management 3.3.2
3. Print out a job announcement for a golf course superintendent 3.3.3

3.4 Label the layers of the putting green structure

1. Diagram a cross section of a putting green 3.4.1

3.5 Describe the management requirements of putting greens, tees, and fairways: watering, mowing, fertilizing, aerifying, topdressing, etc.

1. Record the management practices for putting greens, tees, and fairways 3.5.1

3.6 List stressful conditions affecting putting greens

1. Interview a golf course superintendent or maintenance crew leader regarding stresses on putting greens 3.6.1

3.7 Describe the major management practices used to keep roughs, bunkers, and hazards functional

1. Prepare a maintenance schedule for roughs, bunkers, and hazards 3.7.1

3.8 List key factors influencing mowing quality

1. Perform proper mowing techniques 3.8.1

3.9 Discuss the basic requirements of mowing greens

1. Watch a demonstration of the recommended mowing of putting greens 3.9.1

3.10 Compare the fertilization programs of greens, tees, fairways, and roughs

1. Prepare a fertilization schedule for greens, tees, fairways, and roughs 3.10.1

3.11 Explain how fertilizer requirements are determined

1. Calculate the amount of fertilizer to be applied to a specific area 3.11.1

3.12 Discuss environmental issues in relation to fertilization

1. Participate in a debate on environmental issues associated with golf course fertilization 3.12.1

3.13 Identify turfgrass diseases; dollar spot, brown patch, pythium blight, snow mold and spring dead spot

1. Relate turfgrass disease symptoms to a disease 3.13.1

3.14 Outline disease control methods

1. Describe methods to manage turfgrasss disease 3.14.1

3.15 Identify weeds; annual weeds, biennial weeds, broadleaf weeds, grass-like weeds, and perennial weeds

1. Classify common weed plants as annual, biennial, broadleaf, grass-like, and/or perennial 3.15.1

3.16 Describe basic weed control and herbicide usage

1. Make recommendations for the control of weed species 3.16.1

3.17 Describe how insect pests attack turfgrass

1. Classify turfgrass insect pests according to the damage they cause 3.17.1

3.18 Identify insect species that are serious pests of turfgrasses; white grubs, cut worms, armyworms, chinch bugs and mole crickets

1. Draw the life cycle and outline the characteristics of white grubs, cut worms, armyworms, chinch bugs, and mole crickets 3.18.1

3.19 Explain how insect pests are managed

1. Recommend methods of managing insect pest populations `3.19.1`

3.20 List the components and importance of IPM

1. Prepare a report on the components of an Integrated Pest Management (IPM) program and the theory behind Integrated Pest Management `3.20.1`

3.21 List the types of pesticides used on golf courses

1. Interview a golf course superintendent or a maintenance crew leader on the types of pesticides commonly used on golf courses `3.21.1`

Sports Turf

4.1 Define sports turf terms

1. Match terms to definitions `4.1.1`

4.2 Describe the main types of sports fields: football field, baseball field, and soccer field

1. Layout the dimensions of the main types of sports fields `4.2.1`
2. Sketch the main types of sports fields and label the dimensions `4.2.2`

4.3 Identify major turfgrasses used for sports fields and the characteristics that make them useful

1. Select turfgrass species based on their characteristics for use on sports fields `4.3.1`

4.4 Explain the layout and flagging of a course to dimension using surveying equipment and GPS technology

1. Set up a tripod `4.4.1`
2. Mount a survey instrument `4.4.2`
3. Level the instrument `4.4.3`
4. Read a leveling rod using the surveying instrument `4.4.4`
5. Layout and flag a course to survey `4.4.5`
6. Layout and flag a course to survey using GPS technology `4.4.6`
7. Measure a high school or area athletic field `4.4.7`
8. Verify local athletic field sizes using GPS technology `4.4.8`

Turf Irrigation

5.1 Define irrigation terms

1. Match terms with definitions `5.1.1`

5.2 Compare irrigation systems

1. Outline the pros and cons of the different types of irrigation systems `5.2.1`

5.3 Determine the type and number of sprinklers necessary to irrigate a certain area

1. Calculate the type and number of sprinklers needed for an area 5.3.1
2. Sketch a 2 dimensional layout of a property 5.3.2
3. Measure items for a plan (including beds, trees, shrubs, buildings, driveways, etc.) 5.3.3
4. Sketch an accurate irrigation plan 5.3.4

5.4 List the key factors influencing irrigation quality: PSI, water quality

1. Interview an irrigation technician to learn about factors that influence irrigation quality 5.4.1

Equipment and Equipment Maintenance

6.1 Define equipment and maintenance terms

1. Match terms with definitions 6.1.1

6.2 Identify the basic components of small engines used on golf course equipment

1. Locate and name the basic components of a small engines 6.2.1

6.3 Differentiate between the component functions of two and four cycle engines

1. Report on the advantages and disadvantages of two and four cycle engines 6.3.1

6.4 List maintenance procedures recommended for small engines

1. Change the oil in a lawn mower or small gas engine 6.4.1
2. Service the air cleaner 6.4.2
3. Clean a fuel tank and line 6.4.3
4. Clean carburator float bowl 6.4.4
5. Replace the spark plug 6.4.5
6. Clean engine of all dirt and debris 6.4.6
7. Examine engine for loosened bolts or other parts and tighten 6.4.7

6.5 Discuss the differences between diesel and gasoline engines

1. Prepare a list of characteristics associated with diesel and gasoline engines 6.5.1

6.6 List the maintenance procedures used for mowers

1. Remove and sharpen the mower blades 6.6.1

6.7 Identify the components of a boom sprayer

1. Locate and name the components of a boom sprayer 6.7.1

6.8 Discuss the process of calibrating a boom sprayer

1. Calibrate a boom sprayer 6.8.1

6.9 Explain the maintenance of sprayers

1. Report on the maintenance practices associated with a boom sprayer 6.9.1